BYZANTINA LODZIENSIA
XXXVIII

Milk and Dairy Products in the Medicine and Culinary Art of Antiquity and Early Byzantium (1st–7th Centuries AD)

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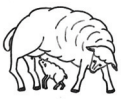

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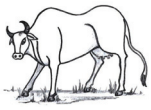

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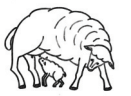
Introduction



1. Some comments on the book and its structure

This publication is the fruit of many years' research into the diets, dietetics, pharmacology and gastronomy of antiquity and early Byzantium, for which it draws extensively on Greek medical treatises from the 1st to the 7th c. AD.

With regard to the ancient and Byzantine teachings the research is based on, those of Galen of Pergamum (2nd/3rd c. AD)[1] serve as the reference point

[1] On the physician and his professional activities, cf. L. Thorndike, *Galen. The Man and his Times*, ScM 14.1, 1922, p. 83–93; D.E. Eichholz, *Galen and his Environment*, GR 20, 1951, p. 60–71; G. Sarton, *Galen of Pergamon*, Lawrence 1954, *passim*; V. Nutton, *The Chronology of Galen's Early Career*, CQ 23.1, 1973, p. 158–171; J. Scarborough, *The Galenic Question*, SuA 65.1, 1981, p. 1–31; idem, *Early Byzantine Pharmacology*, DOP 38, 1984, p. 215–221; H.F.J. Horstmanshoff, *Galen and his Patients*, [in:] *Ancient Medicine in its Socio-Cultural Context. Papers Read at the Congress Held at Leiden University, 13–15 April 1992*, vol. I, eds. Ph.J. van der Eijk, H.F.J. Horstmanshoff, P.H. Schrijvers, Amsterdam 1995, p. 83–99; J. Wilkins, *The Contribution of Galen, De Subtiliante Diaeta (On the Thinning Diet)*, [in:] *The Unknown Galen*, ed. V. Nutton, London 2002, p. 47–55; V. Nutton, *Ancient Medicine*, London–New York 2005, p. 222–235; R. Flemming, *Galen's*

and are juxtaposed with the writings of the medical authors who preceded him (e.g. Celsus and Dioscorides [1st c. AD][2]), and those who penned their works posterior to his lifetime (Oribasius [4th c. AD][3],

Imperial Order of Knowledge, [in:] *Ordering Knowledge in the Roman Empire*, eds. J. K ö n i g, T. W h i t m a r s h, Cambridge 2007, p. 241–277; R.J. H a n k i n s o n, *Galēn of Pergamon (155 – 215 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists. The Greek Tradition and its Many Heirs*, eds. P.T. K e y s e r, G. I r b y-M a s s i e, London–New York 2008, p. 335–339; i d e m, *The Man and his Work*, [in:] *The Cambridge Companion to Galen*, ed. R.J. H a n k i n s o n, Cambridge 2008, p. 1–33; *Galen and the World of Knowledge*, eds. Ch. G i l l, T. W h i t m a r s h, J. W i l k i n s, Cambridge 2009, *passim*; G. C o s m a c i n i, M. M e n g h i, *Galeno e il galenismo. Scienza e idee della salute*, Milano 2012, *passim*; S.P. M a t t e r n, *The Prince of Medicine: Galen in the Roman Empire*, Oxford 2013, *passim*; T. R a i o l a, *Nel tempo di una vita. Studi sull'autobiografia in Galeno*, Pisa–Roma 2015, *passim*; D. L e h o u x, *The Authority of Galen's Witnesses*, [in:] *Authority and Expertise in Ancient Scientific Culture*, eds. J. K ö n i g, G. W o o l f, Cambridge–New York 2017, p. 260–282; R.M. R o s e n, *Anatomy and Aporia in Galen's On the Construction of Fetuses*, [in:] *Authority...*, p. 283–305; S. X e n o p h o n t o s, *Galen's Exhortation to the Study of Medicine: An Educational Work for Prospective Medical Students*, [in:] *Greek Medical Literature and its Readers: From Hippocrates to Islam and Byzantium*, eds. P. B o u r a s-V a l l i a n a t o s, S. X e n o p h o n t o s, London–New York 2018, p. 67–93, etc.

[2] Cf. chapters devoted to their teachings.

[3] About the physician and his professional activities, cf. B. B a l d w i n, *The Career of Oribasius*, AClas 18, 1975, p. 85–97; i d e m, *Beyond the House Call: Doctors in Early Byzantine History and Politics*, DOP 38, 1984, p. 17–18; J. S c a r b o r o u g h, *Early Byzantine...*, p. 221–224; M. G r a n t, *Oribasios and Medical Dietetics or the Three Ps*, [in:] *Food in Antiquity*, eds. J. W i l k i n s, D. H a r v e y, M. D o b s o n, Exeter 1999, p. 371–379; K. G e ō r g a k o p o u l o s, *Archaioi hellēnes iatroi*, Athenai 1998, p. 62–63; A.Chr. E f t y c h i a d i s, *Renal and Glomerular Circulation According to Oribasius (4th Century)*, AJNe 22.1, 2002, p. 136–138; J. L a s c a r a t o s, E. P o u l a k o u-R e b e l a k o u, *Oribasius (Fourth Century) and Early Byzantine Perinatal Nutrition*, JPGN 36.2, 2003, p. 186–189; R. d e L u c i a, *Oreibasios v. Pergamon*, [in:] *Antike Medizin. Ein Lexikon*, ed. K.-H. L e v e n, München 2005, cols. 660–661; M. K o k o s z k o, *Ryby i ich znaczenie w życiu codziennym ludzi późnego antyku i Bizancjum (IV–VII w.)*, Łódź 2005, p. 14–15; V. N u t t o n, *Ancient Medicine...*, p. 295–296; G. K l a n t z ē s, K. T s i a m ē s, E. P o u l a k o u-R e b e l a k o u, *Oreibasios kai Paulos Aiginētēs. Dyo Byzantinoi iatroi, prōtoporoi stēn plastikē cheirourgikē*, AHM 23.5, 2006, p. 537–539; R. d e L u c i a, *Oribasio di Pergamo*, [in:] *Medici bizantini. Oribasio di Pergamon. Aezio d' Amida. Alessandro di Tralle. Paolo d'Egina. Leone medico*, eds. A. G a r z y a, R. d e L u c i a, A. G u a r d a s o l e, A.M. I e r a c i B i o, M. L a m a g n a, R. R o m a n o,

Aëtius of Amida [6th c. AD][4], Anthimus [6th c. AD][5], Paul of Aegina

Torino 2006, p. 21–29; J. S c a r b o r o u g h, *Oreibasios of Pergamon (ca 350 – ca 400 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 595–596; M. L ó p e z P é r e z, *Ginecología y patología sexual femenina en las Colecciones Médicas de Oribasio*, Oxford 2010, p. 44–70; K. J a g u s i a k, M. K o k o s z k o, *Życie i kariera Orybazjusza w świetle relacji źródłowych*, PNH 10.1, 2011, p. 5–21; i i d e m, *Pisma Orybazjusza jako źródło informacji o pożywieniu ludzi w późnym Cesarstwie Rzymskim*, VP 33, 2013, p. 339–357; A. K o m p a, M.J. L e s z k a, T. W o l i ń s k a, *Mieszkańcy stolicy świata. Konstantynopolitańczycy między starożytnością a średniowieczem*, Łódź 2014, p. 21–22, etc.

[4] About the physician and his professional activities, cf. M. W e l l m a n n, *Aetios (8)*, [in:] *RE*, vol. I, Stuttgart 1894, cols. 703–704; H. L e h m a n n, *Zu Aëtius Amidenus*, SuA 23, 1930, p. 205–206; P. D i e p g e n, *Zur Frauenheilkunde im byzantinischen Kulturkreis des Mittelalters*, Wiesbaden 1950, p. 4–5; A. G u i l l o u, *La civilisation byzantine*, Paris 1974, p. 357; H. H u n g e r, *Die hochsprachliche profane Literatur der Byzantiner*, vol. I, München 1978, p. 294–296; V. N u t t o n, *From Galen to Alexander. Aspects of Medicine and Medical Practice in Late Antiquity*, DOP 38, 1984, p. 6–7; J. S c a r b o r o u g h, *Early Byzantine...*, p. 224–226; K. G e ō r g a k o p o u l o s, *Archaioi...*, p. 24–26; M. K o k o s z k o, *Ryby...*, p. 9–10; A. G a r z y a, *Aetios v. Amida*, [in:] *Antike Medizin...*, cols. 19–20; V. N u t t o n, *Ancient Medicine...*, p. 295; R. R o m a n o, *Aezio Amideno*, [in:] *Medici bizantini...*, p. 255–261; J. S c a r b o r o u g h, *Aëtios of Amida (500 – 550 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 38–39; D.P. L a z a r i s, F.J. L a s k a r a t o s, G.J. L a s c a r a t o s, *Surgical Diseases of the Womb According to Aetius of Amida (6th Century A.D.)*, WJS 33.6, 2009, p. 1310–1317; J. S c a r b o r o u g h, *Theodora, Aetius of Amida, and Procopius: Some Possible Connections*, GRBS 53, 2013, p. 742–762; Ph. v a n d e r E i j k, M. G e l l e r, L. L e h m h a u s, M. M a r t e l l i, Ch. S a l a z a r, *Canons, Authorities and Medical Practice in the Greek Medical Encyclopaedias of Late Antiquity and in the Talmud*, [in:] *Wissen in Bewegung: Institution – Iteration – Transfer*, eds. E. C a n c i k-K i r s c h b a u m, A. T r a n i n g e r, Wiesbaden 2015, p. 198–204; R. G ä b e l, *Mental Illnesses in the Medical Compilations of Late Antiquity: The Case of Aëtius of Amida*, [in:] *Mental Illness in Ancient Medicine: From Celsus to Paul of Aegina*, eds. Ch. T h u m i g e r, P.N. S i n g e r, Leiden–Boston 2018, p. 315–340, etc.

[5] About the physician and his professional activities, cf. G.M. M e s s i n g, *Remarks on Anthimus De observatione ciborum*, CP 37.2, 1942, p. 150–158; G. B a a d e r, *Early Medieval Latin Adaptations of Byzantine Medicine in Western Europe*, DOP 38, 1984, p. 251–252; E. K i s l i n g e r, *Anthimus*, [in:] *Antike Medizin...*, col. 56; Y. H e n, *Food and Drink in Merovingian Gaul*, [in:] *Tätigkeitsfelder und Erfahrungshorizonte des ländlichen Menschen in der frühmittelalterlichen Grundherrschaft (bis ca. 1000): Festschrift für Dieter Hägermann zum 65. Geburtstag*, ed. B. K a s t e n, München 2006,

[7th c. AD][6] and the anonymous author of the treatise *De cibis*[7]). At times, however, the treatises have been supplemented with thematically applicable non-medical literature (mostly agronomical, encyclopaedic, lexicographic but also with belles lettres) in both Greek as well as Latin. This serves to trace and demonstrate the centuries-long process of the Greek dietetic-pharmacological theory and practice gradually permeating the entire Mediterranean world. This phenomenon resulted in one universal medical doctrine that was observed in all areas where Greek and Roman culture prevailed.

In this volume, milk and milk-based products are discussed. The subject is broad. The research should be viewed through the context of our previous undertakings and is an addition to our previously-published material. Thus, the present discussion of dairy is a logical continuation of the chapter entitled *Rola mięsa w okresie pomiędzy II a VII w. w świetle źródeł medycznych (The Role of Meat in the Period of the 2nd to 7th Centuries, in the Light of Medical Sources)*, included in the book *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część II, *Pokarm dla ciała i ducha* (*Dietetics and Culinary Art of Antiquity and Early Byzantium [2nd–7th Centuries]*, Part II, *Food for the Body and Soul)*, ed. Maciej Kokoszko, Łódź 2014. This fact has its reflection in the struc-

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p. 99–110; J. S c a r b o r o u g h, *Anthimus (of Constantinople?) (ca 475 – 525 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 91–92, etc.

[6] On the physician and his professional activities, cf. H. D i l l e r, *Paulus (23)*, [in:] *RE*, vol. XVIII, 4, Stuttgart 1949, cols. 2386–2397; J. S c a r b o r o u g h, *Early Byzantine...*, p. 228–229; Ch.F. S a l a z a r, *Getting the Point; Paul of Aegina on Arrow Wounds*, SuA 82.2, 1998, p. 170–187; R. G u r u n l u o g l u, A. G u r u n l u o g l u, *Paul of Aegina: Landmark in Surgical Progress*, WJS 27.1, 2003, p. 18–25; P.E. P o r m a n n, *Paulos v. Aigina*, [in:] *Antike Medizin...*, cols. 681–682; M. L a m a n g a, *Paolo di Egina*, [in:] *Medici bizantini...*, p. 683–695; G. K l a n t z ē s, K. T s i a m ē s, E. P o u l a k o u-R e b e l a k o u, *Oreibasios...*, p. 539–540; P.E. P o r m a n n, *Paulos of Aigina (ca 630 – 670 CE?)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 629; Ch. S a l a z a r, *Continuity and Innovation in Paul of Aegina's Chapters on Headaches and Migraines*, [in:] *Collecting Recipes. Byzantine and Jewish Pharmacology in Dialogue*, eds. L. L e h m h a u s, M. M a r t e l l i, Boston–Berlin 2017, p. 175–193, etc.

[7] The treatise was dedicated to emperor Constantine IV, who ruled between 668 and 685. Cf. F.Z. E r m e r i n s, *L.S. (Introductio)*, [in:] *Anecdota medica Graeca*, ed. F.Z. E r m e r i n s, Leiden 1963, p. XI–XII; A. D a l b y, *Flavours of Byzantium*, Blackawton–Totnes 2003, p. 18; i d e m, *Tastes of Byzantium. The Cuisine of a Legendary Empire*, London–New York 2010, p. 18.

ture of the present publication. As the book has been based primarily on sources which have already been discussed at length, both in the above-mentioned volume and in the book which constituted the first part of this series[8], we decided not to include in the present book another detailed review of the said sources.

We started our work on this publication with a view to translating the results of our research into eggs and dairy which were published back in 2016 in Polish (Z. Rzeźnicka, M. Kokoszko, *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część III, *Ab ovo ad γάλα. Jajka, mleko i produkty mleczne w medycynie i w sztuce kulinarnej [I–VII w.]*(*Dietetics and Culinary Art of Antiquity and Early Byzantium [2nd–7th Centuries AD])*, Part III, *Ab ovo ad γάλα. Eggs, Milk and Other Dairy Products in Dietetics and Culinary Art [1st–7th Centuries AD],* Łódź 2016). Soon, however, we found out that the undertaking was not as easy and straightforward as we had thought. Accordingly, we decided to focus on milk only, and rework the material published in Polish in terms of its content and structure, introducing new findings[9], correcting mistakes and misinterpretations, adding an appendix on the term *pyríephtha* as well as supplementing the bibliography with the latest published works. Eventually, we had penned an entirely new book, which will hopefully turn out to be of value for those interested in the medicine and gastronomy of antiquity and Byzantium.

As our goal was for the book to be addressed not only to the circle of Polish language speakers but also ventured to present our research

[8] M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część I, *Zboża i produkty zbożowe w źródłach medycznych antyku i wczesnego Bizancjum (II–VII w.)* (*Dietetics and Culinary Art of Antiquity and Early Byzantium [1st–7th Centuries]*, Part I, *Cereals in Medical Sources of Antiquity and Early Byzantium [2nd–7th Centuries])*, Łódź 2014, p. 5–26; i i d e m, *Wstęp. Dietetyka, farmakologia i sztuka kulinarna w źródłach medycznych* (*Introduction. Dietetics, Pharmacology and Culinary Art in Medical Sources*), [in:] *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część II, *Pokarm dla ciała i ducha* (*Dietetics and Culinary Art of Antiquity and Early Byzantium [2nd–7th Centuries]*, Part II, *Food for the Body and Soul*), ed. M. K o k o s z k o, Łódź 2014, p. 55–66.

[9] These were possible, *inter alia*, thanks to two research stays in London, which were financed by the De Brzezie Lanckoronski Foundation (Maciej Kokoszko – 2017; Zofia Rzeźnicka – 2018).

to an international public, we gathered a group of collaborators who have helped to translate our thoughts into English (Konrad Brzozowski and Iza Michalak), and, subsequently, those that proofread the outcome (Benjamin Brewer, Derrick Cook and Mark Muirhead). We fully appreciate the results of their work.

The present study begins with a short introduction which outlines the role the above foods played in the Mediterranean region. It is followed by a chapter which discusses the origin of the medical theory on milk, which we term 'galactology', comprising Celsus' and Dioscorides' topical teachings, both of whom were active in the 1st c. AD, i.e., before the critical era of Galen of Pergamum, who is credited with unifying the canon of medical science. The subsequent parts of the volume have been organised thematically and they discuss the dietetics of dairy, its *materia medica*, examples of uses in medical procedures and culinary data on milk and its derivatives.

The appendix deviates from the above pattern of organizing the material and shows how medical treatises may become useful not only when analysing the history of medicine but also the history of ancient literature[10].

In the concluding chapter, general observations have been made on the significance and usage of each of the mentioned foods in diets and therapeutic procedures.

Last but not least, the book includes a glossary of the Greek terminology that occurs throughout the text as well as a comprehensive bibliography.

2. Humoral theory – an outline

A brief outline of the humoral theory, which constituted a pillar of ancient and medieval medicine for several centuries, is necessary to better introduce the reader to the considerations presented in this volume[11].

[10] We are aware of the fact that the appendix is a mere sketch, and we intend to develop it into a full picture of the research problem in a separate article.

[11] On humoral theory and the ancient and Byzantine dietetics, cf. A. D r y g a s, *"Soki" (humory) w teorii Hipokratesa*, FP 51.15, 1995, p. 671–676; M. G r a n t, *Introduction*,

Credited with this theory, Hippocrates of Kos (5th/4th c. BC)[12] posited that illnesses resulted from the distorted balance in organic fluids circulating in the body (*chymoi*). He is generally believed to have identified four dominant humours, namely blood, yellow bile, black bile and phlegm, each with its own unique characteristics. Blood was hot and wet, bile – hot and dry, black bile – cold and dry, and phlegm – cold and wet. Given this theoretical assumption, the most important challenge that medical practitioners of those days faced was maintaining a relative balance (*eukrasía*) between these humours. This was by no means a simple endeavour as, according to the prevailing belief, their proportions varied (which is even today referred to as an individual temperament, i.e., *krásis*) and was subject to change at different stages of life.

The imbalance of humours (*dyskrasía*) was considered to be a direct cause of all diseases and manifested itself through marked changes in

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[in:] M. Grant, *Dieting for an Emperor. A Translation of Books 1 and 4 of Oribasius' Medical Compilations with an Introduction and Commentary*, Leiden–NewYork–Köln 1997, p. 4–12; M. Bujalkova, S. Straka, A. Jureckova, *Hippocrates' Humoral Pathology in Nowaday's Reflections*, BrLL 102.10, 2001, p. 289–492; P. Demont, *About Philosophy and Humoural Medicine*, [in:] *Hippocrates in Context. Papers Read at the XIth International Hippocrates Colloquium. (University of Newcastle upon Tyne, 27–31 August 2002)*, ed. Ph.J. van der Ejik, Leiden–Boston 2005, p. 271–286; J. Jouanna, *The Legacy of the Hippocratic Treatise The Nature of Man: Theory of the Four Humours*, [in:] *Greek Medicine from Hippocrates to Galen. Selected Papers by Jacques Jouanna*, ed. Ph. van der Eijk, transl. N. Allies, Leiden–Boston 2012, p. 335–359; Z. Rzeźnicka, *Procedury dietetyczne w kuracji gorączki ciągłej (sýnochos pyretós [σύνοχος πυρετός]) na podstawie wybranych traktatów medycznych antyku i wczesnego Bizancjum*, [in:] *Historia diety i kultury odżywiania*, vol. I, eds. B. Płonka-Syroka, H. Grajeta, A. Syroka, Wrocław 2018, p. 43–55, etc.

[12] On the physician and his activity, cf. H. Gossen, *Hippokrates (16)*, [in:] *RE*, vol. VIII, Stuttgart 1913, cols. 1801–1852; L. Edelstein, *Hippokrates*, [in:] *RE*, Supplementband VI, Stuttgart 1935, cols. 1290–1345; F.P. Retief, L. Cilliers, *Hippocrates: Facts and Fiction*, [in:] *Health and Healing, Disease and Death in the Graeco-Roman World*, eds. F.P. Retief, L. Cilliers (AThe: Supplementum 7), Bloemfontein 2005, p. 1–13; R. Wittern, *Hippokrates*, [in:] *Antike Medizin...*, cols. 414–416; J. Jouanna, *Hippokratēs of Kōs (ca 440 – ca 370 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 404–405; M. Wesoły, *Po co nam dziś Hippokrates?*, [in:] Hippokrates, *Wybór pism*, transl. M. Wesoły, vol. I, Warszawa 2008, p. 11–42; E. Tsiompanou, S.G. Marketos, *Hippocrates: Timeless Still*, JRSM 106.7, 2013, p. 288–292, etc.

a patient's well-being and appearance. Restoring the balance occurred through observing a particular diet, i.e., a particular lifestyle congruent with an individual's specific needs – one that comprised physical activity, regular baths, defaecation and ingesting healthy foodstuffs. The latter was given special prominence as food was believed to provide the body with the substances which, as a result of effective digestion, were transformed into a particular bodily juice. Therefore, physicians placed a great deal of emphasis in their treatises on the dietary characteristics of various foodstuffs[13]. While diagnosing the patient's condition, they identified the cause of the loss of humoral balance and prescribed a suitable diet and physical activity that were intended to redress the equilibrium.

The choice of foodstuffs required a broad knowledge of physiology, medicine and culinary art. Offering the same product to individuals who differed in terms of *krásis* would be beneficial to some patients but harmful to others. For instance, elderly people were discouraged from consuming foodstuffs which generated thick juices. Nutritious as they were, for the elderly they could be too heavy and therefore likely to block internal organs. This contraindication did not concern young people, who did not suffer such digestive problems and who, due to their high degree of physical activity, ought to consume high-energy foods. The quality of the product itself was no less important (and in the case of milk the freshest possible product was usually recommended, as it was best

[13] On the relationship between pharmacology and dietetics, cf. J. S t a n n a r d, *Aspects of Byzantine Materia Medica*, DOP 38, 1984, p. 210; V. N u t t o n, *Ancient Medicine*..., p. 96–98; J. J o u a n n a, *Dietetics in Hippocratic Medicine: Definition, Main Problems, Discussion*, [in:] *Greek Medicine*..., p. 137–153; M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, *Zboża i produkty zbożowe*..., p. 5–26; H. B a r t o š, *Philosophy and Dietetics in the Hippocratic On Regimen. A Delicate Balance of Health*, Leiden–Boston 2015, *passim*; L. T o t e l i n, *When Foods Become Remedies in Ancient Greece: The Curious Case of Garlic and Other Substances*, JEthn 167, 2015, p. 30–37; A. T o u w a i d e, E. A p p e t i t i, *Food and Medicines in the Mediterranean Tradition. A Systematic Analysis of the Earliest Extant Body of Textual Evidence*, JEthn 167, 2015, p. 11–29; J. W i l k i n s, *Good Food and Bad: Nutritional and Pleasurable Eating in Ancient Greece*, JEthn 167, 2015, p. 7–10; A. L a p o u j a d e L e j a v i t z e r, *Dieta saludable, alimentos puros y purificación en el mundo grecolatino. Healthy Diet, Pure Food and Purification in the Greco-Roman World*, NTe 34.1, 2016, p. 109–121, etc.

absorbed by the body). Other vital factors to be considered included using (or not) the right heat treatment of food, and additives (herbs, spices, etc.). The same products prepared in different ways could be conducive to generating good or bad juices. The former were classified as *eúchyma* and the latter *kakóchyma*. Oribasius, befriended by Emperor Julian the Apostate, offered a clear classification of such dietary data in the form of dozens of comprehensive catalogues in which foodstuffs were categorised based on their dominant characteristics. This perspective gained the approval of medical circles and was drawn on by subsequent generations of physicians, such as Aëtius of Amida and the anonymous author of the treatise *De cibis*.

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A Few Words on Milk and Dairy Products

Investigating the importance of milk and its derivatives in the dietetics, pharmacology, therapeutics and gastronomy of antiquity and the early Byzantine period may, at very first glance, cause slight wonderment. After all, in the Mediterranean region, initially influenced by Greek, later by Roman and still later by Byzantine cultures, it was wine, not milk, that had – for centuries – been the most prevalent drink, and it was olive oil, not butter that was the most significant source of fat. This does not mean, however, that the range of dairy products in which we take an interest played a marginal role in the diet of the people of that time. Quite the contrary: since time immemorial, milk and its derivative foods – alongside cereal products – constituted an important element of the peasantry diet (shepherds, in particular) in the territories around the Mediterranean Sea. What is more, dairy also played a similar role in the life of nomadic tribes[1]. And that is why, in all likelihood, milk and cheese

[1] Cf. S t r a b o, IV, 6, 2 (milk as an important constituent of the diet of Ligurian shepherds); C o l u m e l l a, VII, 2, 1–2 (milk as the base of nomads' diet); G a l e n, *Ad Glauconem de medendi metodo*, 142, 7, vol. XI (milk as the food of the Scythians);

became synonymous with the simple rustic and pastoral food of the time, or – like butter – a food for barbarians, who were strangers to the achievements of European antiquity[2]. Presumably, this link to these particular groups of consumers is the reason why the products of our interest have often been presented as somewhat unexceptional foodstuffs eaten, as a rule, by simple and uncultured people[3].

Athenaeus of Naucratis, II, 46 e (26, 5–6, milk as the basic drink of some peoples living on the periphery of Greek and Roman civilisation). On milk (and milk products) as the food of barbarians, peasantry, and shepherds, cf. F. Dupont, *Grammaire de l'alimentation et des repas romains*, [in:] *Histoire de l'alimentation*, eds. J.L. Flandrin, M. Montanari, Paris 1996, p. 197; O. Longo, *La nourriture des autres*, [in:] *Histoire...*, p. 269–271; J. Auberger, *«Du prince au berger, tout homme a son content de fromage...» Odyssée, 4, 87–88*, REG 113, 2000, p. 23–31; G. Malinowski, *Zwierzęta świata antycznego. Studia nad Geografią Strabona*, Wrocław 2003, p. 50–51; O. Longo, *The Fairness of the Farm. Food, Ecology and Ethics in Ancient Greece*, FH 2.2, 2004, p. 201; P. Tuffin, M. McEvoy, *Steak à la Hun: Food, Drink, and Dietary Habits in Ammianus Marcellinus*, [in:] *Feast, Fast or Famine. Food and Drink in Byzantium*, eds. W. Mayer, S. Trzcionka, Brisbane 2005, p. 79, 82; J.P. Alcock, *Food in the Ancient World*, Westport–London 2006, p. 159, 167, 178, 235; P. Garnsey, *Food and Society in Classical Antiquity*, Cambridge 1999, p. 65–70; V. Nutton, *Galen and the Traveller's Fare*, [in:] *Food in Antiquity*, eds. J. Wilkins, D. Harvey, M. Dobson, Exeter 1999, p. 360; J.M. Wilkins, S. Hill, *Food in the Ancient World*, Malden, Mass.–Oxford 2006, p. 23, 131, 161–162; D. Braund, *Food among Greeks of the Black Sea: the Challenging Diet of Olbia*, [in:] *A Companion to Food in the Ancient World*, eds. J. Wilkins, R. Nadeau, Malden, Mass.–Oxford–Chichester 2015, p. 300; Ch. Chandezon, *Animals, Meat, and Alimentary By-Products: Patterns of Production and Consumption*, [in:] *A Companion...*, p. 143; S. Hitch, *Anthropology and Food Studies*, [in:] *A Companion...*, p. 120–121; A. Pellettieri, *Latte e latticini. Aspetti della produzione e del consumo nelle società mediterranee dell'Antichità e del Medioevo. Le ragioni del convegno*, [in:] *Latte e latticini. Aspetti della produzione e del consume nella società miditerranee dell'Antichità e del Medioevo*. *Atti del Convegno Internazionale di Studio promosso dall'IBAM – CNR e dall'IRS – FNER nell'ambito del Progetto MenSALe Atene, 2–3 Ottobre 2015*, eds. I. Anagnostakis, A. Pellettieri, Lagonegro 2016, p. 9; M. Gobbetti, E. Neviani, P. Fox, *The Cheeses of Italy: Science and Technology*, Cham 2018, p. 14.

[2] For instance, cf. Galen's opinion expressed in his dietetic characteristics of butter. It is not inconceivable, however, that butter was produced in some Greek regions, cf. J.M. Wilkins, S. Hill, *Food...*, p. 162.

[3] This is expressed, for instance, by Euripides who – when referring to a peasant – uses the phrase *galaktopótas anér*, i.e., 'a man who feeds on milk', cf. Euripides, 169. Another meaningful example in classical literature is the extract from *The Odyssey*

As far as the sources for our present investigation are concerned, unsurprisingly, milk and dairy were a point of interest to the ancient and Byzantine agronomists when compiling their works, since they were perfectly aware of the features which characterised the milk of any given animal species and the methods which had to be applied to improve its quality. Moreover, their writings also contained a substantial amount of detailed information regarding the technology which enabled the production of such foodstuffs as soured milk, curd, and cheese[4].

More surprisingly, however, the subject of dairy was also extensively covered in the medical literature of both periods. What is more, medical doctors formulated a coherent theory on the uses of milk and other dairy products. This particular source of knowledge has yet to be investigated, though the present study will try to demonstrate how abundant in information it is.

Due to a cornucopia of data, the present investigations will treat the issue only on the base of carefully selected examples. Otherwise, the work would have evolved into a multi-volume treatise. Nonetheless, the book often refers to the contents of sources, an approach which might seem to some readers to result in excessive meticulousness. It is, however, indispensable, since the related knowledge is known exclusively to the small circle of Hellenists and Latinists who devoted their life to studying medical writings. In most cases, however, we had to subject

in which the poet describes the lifestyle of cyclopes, presenting them as a savage tribe, ignorant of the law, growing crops and creating simple crafts. The author of the epic poem reports that they lead the life of shepherds, using goat milk to produce cheeses, cf. H o m e r, IX, 105–115; IX, 219–229; IX, 244–249. More on the issue, cf. P. G a r n s e y, *Food...*, p. 65; A. D a l b y, R. D a l b y, *Gifts of the Gods. A History of Food in Greece*, London 2017, p. 45; M. G o b b e t t i, E. N e v i a n i, P. F o x, *The Cheeses of Italy...*, p. 13–14. A similar attitude towards milk products is adopted by the Romans, as can be seen, for instance, in Suetonius' (1st c. AD) account of Augustus' (1st c. BC/1st c. AD) culinary preferences. According to the historian, the emperor opted for simple, almost coarse food, including mediocre-quality bread, small fish, hand-squeezed cheese made from cow milk, and figs, cf. S u e t o n i u s, II, 78, 1. Nevertheless, it must be emphasised that the Mediterranean world were aware of exquisite types of cheese, for which wealthy gourmets were willing to pay a high price – as shown hereinafter, in the excerpt on the culinary application of cheese.

[4] Authors of agronomical treatises ignored butter in their deliberations.

our sources to careful selection. For the extant information available, the process has been particularly strict when therapeutic information was examined, while culinary data retrieved from medical sources had to be supplemented by means of a number of different works.

In order to give the research a readable form, the book has been divided into separate chapters, which discuss the dietetic nature of dairy, the *materia medica* knowledge on it, its therapeutic applications, and, last but not least, the culinary uses of milk and its most common derivatives.

Our choice of sources, compositional strategy and working method can be justified by quoting an extract from Varro (2nd/1st c. BC)[5]. His *De re rustica*, being an agronomical treatise, perfectly illustrates the convergence of ancient and Byzantine studies into agriculture and medicine[6], with both containing a similar source of information, characterised by the analogical structure of its presentation.

Accordingly, in *De re rustica* Varro commences with remarks worthy of a physician specialising in dietetics. Notably, he argues that milk is the most nutritious of all liquid foods, giving special praise to that obtained from sheep and goats[7]. The author also adds that milk possesses certain laxative properties, and in this respect, he lists those of mares, donkeys,

[5] On the author and his treatise, cf. I. M i k o ł a j c z y k, *Rzymska literatura agronomiczna*, Toruń 2004, p. 114–169; A. D o o d y, *The Authority of Writing in Varro's De re rustica*, [in:] *Authority and Expertise in Ancient Scientific Culture*, eds. J. K ö n i g, G. W o o l f, Cambridge–New York 2017, p. 182–202.

[6] Agronomical authors were interested not only in agricultural data *sensu stricto*, but also provided their readers with information verging on medical advice, cf. S. B o s c h e r i n i, *La medicina in Catone e Varrone*, [in:] *ANRW*, vol. II, 37, 1, Berlin 1993, p. 729–755; G. N e l s e s t u e n, *Polishing Scrofa's Agronomical "Eloquentia": Representation and Revision in Varro's "De re rustica"*, Phoe 65.3/4, 2011, p. 329; J. D r a y c o t t, *Literary and Documentary Evidence for Lay Medical Practice in the Roman Republic and Empire*, [in:] *Homo Patiens: Approaches to the Patient in the Ancient World*, eds. G. P e t r i d o u, C. T h u m i g e r, Leiden–Boston 2016, p. 436–440; A. D o o d y, *The Authority of Writing...*, p. 189–190; D. B u d z a n o w s k a-W e g l e n d a, *Cato the Elder on Human and Animal Diseases and Medicines for them – According to the Treatise On Agriculture*, CC 21, 2018, p. 31–54.

[7] Varro's deliberations on milk and cheese – V a r r o, *De re rustica*, II, 11, 1–4.

cows and goats[8]. Next, in a way analogical to the one adopted by ancient dieticians, he maintains that the quality of milk is conditioned by three factors, i.e., the fodder, the age and welfare of the livestock, and the time that has elapsed between birth and milking, before going on to discuss each of these factors. Considering the first, Varro declares that the best milk is given by quadrupeds fed on barley and straw, whereas a laxative effect can be obtained by giving the animals green fodder – herbs in particular[9]. In the section devoted to age and welfare, we read that the best-quality milk is derived from young and healthy animals. As for timeliness, Varro states that the best policy is to drink it shortly after milking, though not immediately after the animal has given birth. In his work, the Roman scholar also characterises various types of cheese. As the most nourishing, he advocates products derived from cow milk, while, at the same time, warning the reader that they are hard to digest. In addition, he mentions sheep cheeses, and goat-milk derivatives, which he classifies as the lightest in terms of digestion. In addition, he draws the reader's attention to the fact that the properties of the discussed products also depend on their freshness. Finally, not having strayed from a discourse typical for medical doctors, he informs the reader that soft and fresh cheeses are more nutritious, whereas mature, dry ones do not constitute a valuable foodstuff[10].

To conclude, the quoted extract is of triple value to the studies herein. Firstly, it allows us to establish what determinants guided ancient farmers in their drive to obtain a top-quality primary product that could additionally be processed into other foodstuffs. Secondly, it constitutes evidence of a reciprocal diffusion of two, seemingly separate branches of science, i.e., agronomy and medical dietetics. Thirdly, as Varro's work can be dated to the 1st c. BC, his writings prove that by the time of the collation of the medical works we are to examine the ancient's theory on milk had been already developed.

[8] Cf. the gradation of milk varieties and their characteristics present in Galen's writings examined herein.

[9] The author of *Geoponica*, on the other hand, recommends feeding animals on *Medicago arborea*, or tying *Origanum vulgare* to their bellies, cf. *Geoponica*, XVIII, 12, 1.

[10] Cf. dietetic characteristics of cheeses in the ancient and Byzantine medical treatises analysed herein.

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I

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The Pre-Galenic Science of Milk and Dairy Products — Celsus and Dioscorides: Selected Aspects

1. An introduction to the theory on milk and dairy products

Although milk was a significant constituent of the Mediterranean diet[1], its values were also appreciated in other regions of the ancient

[1] Regarding the regions initially uninfluenced by the Greek and then Roman culture, cf. E. B r e s c i a n i, *Nourritures et boissons de l'Égypte ancienne*, [in:] *Histoire de l'alimentation*, eds. J.L. F l a n d r i n, M. M o n t a n a r i, Paris 1996, p. 63, 65, 67; J. S o l e r, *Les raisons de la Bible: règles alimentaires hébraïques*, [in:] *Histoire*..., p. 73–74, 79; A. S p a n ò G i a m m e l l a r o, *Les Phéniciens et les Carthaginois*, [in:] *Histoire*..., p. 91, 96, etc. As far as the Greek-Roman territory of the basin of the Mediterranean Sea, cf. W.A. O l d f a t h e r, *Homerica: I. akrēton gala, i 297*, CP 8.2, 1913, p. 195–212; F.E. R o b b i n s, *"Unmixed Milk", Odyssey ix, 296–98*, CP 10.4, 1915, p. 442–444; J.O. L o f b e r g, *"Unmixed Milk" Again*, CP 16.4, 1921, p. 389–391; J. A n d r é, *L'alimentation et la cuisine à Rome*, Paris 1961, p. 153–155; K.F. V i c k e r y, *Food in Early Greece*, Chicago 1980, p. 61, 89; M.-C. A m o u r e t t i, *Villes et campagnes grecques*, [in:] *Histoire*..., p. 138, 143; M. C o r b i e r, *La fève et la murène: hiérarchies sociales des nourritures à Rome*, [in:] *Histoire*..., p. 218, 221, 227; A. D a l b y, *Siren Feasts. A History of Food and Gastronomy in Greece*, London–New York 1996, p. 65–66; G. S a s s a t e l l i, *L'alimentation des Etrusques*, [in:] *Histoire*..., p. 186, 188, 191; T. B r a u n, *Barley Cakes and Emmer Bread*, [in:] *Food in Antiquity*, eds. J. W i l k i n s, D. H a r v e y, M. D o b s o n, Exeter 1999, p. 28–29; J.P. A l c o c k, *Milk and its Products in Ancient Rome*, [in:]

world[2]. There is a prevailing belief among scholars, however, that fresh milk was a relatively rare sight on tables in those days, since the people of the time opted for its derivative, i.e., cheese, as it kept significantly longer. This general pattern of consumption endured beyond antiquity and was equally typical in the early Middle Ages[3].

Since the times of Hippocrates ancient medicine was dominated by the opinion that proper nourishment played a major role in the process of maintaining and regaining good health. Therefore, it should come as

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Milk. Beyond the Dairy. Proceedings of the Oxford Symposium on Food and Cookery 1999, ed. H. W a l k e r, Totnes 2000, p. 31–33; C.A. D é r y, *Milk and Dairy Products in the Roman Period*, [in:] *Milk...*, p. 117–118, 121–124; J. A u b e r g e r, *Le lait des Grecs. Boisson divine ou barbare?*, DHA 27.1 2001, p. 131–157; A. D a l b y, *Food in the Ancient World from A to Z*, London–New York 2003, p. 217–218; G. M a l i n o w s k i, *Zwierzęta świata antycznego. Studia nad Geografią Strabona*, Wrocław 2003, p. 46; P. F a a s, *Around the Roman Table. Food and Feasting in Ancient Rome*, transl. S. W h i t e s i d e, Chicago 2005, p. 123–124; J.P. A l c o c k, *Food in the Ancient World*, Westport–London 2006, p. 82–83, 121, 154, 156, 160; J.M. W i l k i n s, S. H i l l, *Food in the Ancient World*, Malden, Mass.–Oxford 2006, p. 119, 161–162; W. C a v a n a g h, *Food Preservation in Greece during the Late and Final Neolithic Periods*, [in:] *Cooking Up the Past: Food and Culinary Practices in the Neolithic and Bronze Age Aegean*, eds. C. M e e, J. R e n a r d, Oxford 2007, p. 115; H. V e l t e n, *Milk. A Global History*, London 2010, p. 29–31, 41–42; A. D a l b y, *The Flavours of Classical Greece*, [in:] *Flavours and Delights. Tastes and Pleasures of Ancient and Byzantine Cuisine*, ed. I. A n a g n o s t a k i s, Athens 2013, p. 22; Ch. C h a n d e z o n, *Animals, Meat, and Alimentary By-Products: Patterns of Production and Consumption*, [in:] *A Companion to Food in the Ancient World*, eds. J. W i l k i n s, R. N a d e a u, Malden, Mass.–Oxford–Chichester 2015, p. 135–137; G. K r o n, *Agriculture*, [in:] *A Companion...*, p. 163; S. M i t c h e l l, *Food, Culture, and Environment in Ancient Asia Minor*, [in:] *A Companion...*, p. 286, 290; D.F. S m i t h, *Food and Dining in Early Christianity*, [in:] *A Companion...*, p. 364.

[2] M. S t o l, *Milk, Butter and Cheese*, BSA 7, 1993, p. 99–113; N. B a t m a n g l i j, *Milk and its By-Products in Ancient Persia and Modern Iran*, [in:] *Milk...*, p. 64–73, etc.

[3] C. P e r r y, *Medieval Arab Dairy Products*, [in:] *Milk...*, p. 275–277; I. A n a g n o s t a k i s, C. A n g e l i d i, *Ē byzantinē theōrēsē tou kyklou tou galaktos (100s–120s aiōnas)*, [in:] *Ē istoria tou ellēnikou galaktos kai tōn proiontōn tou I΄ triēmero ergasias Ksanthē, 7–9 Oktōbriou 2005*, Athena 2008, p. 199–209; I. A n a g n o s t a k i s, T. P a p a m a s t o r a k i s, *Agraulountes kai amelgontes*, [in:] *Ē istoria...*, p. 211–237; M. K o k o s z k o, Smaki Konstantynopola, [in:] *Konstantynopol – Nowy Rzym. Miasto i ludzie w okresie wczesnobizantyńskim*, eds. M.J. L e s z k a, T. W o l i ń s k a, Warszawa 2011, p. 487–489, 560–562; i d e m, *Rola nabiału w diecie późnego antyku i wczesnego Bizancjum (IV–VII w.)*, ZW 16, 2011, p. 8–28.

no surprise that ancient (and also Byzantine) physicians focused on milk and its derivatives in their deliberations[4], generating a set of beliefs that was shaped over centuries, which in Greek might be termed *galaktología iatriké*. This doctrine, in a form consolidated within two extant source texts from the 1st c. AD, will be the subject of my study.

2. Theory on milk and dairy products in the encyclopaedia *De medicina* by Aulus Cornelius Celsus

It seems fitting to commence our deliberations on milk not from a work written in Greek, but from a Latin treatise, since this is the earliest comprehensive depiction which I am familiar with of the medical science of milk prevailing before the 1st c. AD. Thus, the subject of the first part of the present text is the theory of milk included in the Latin work entitled *De medicina* and compiled by Celsus (Aulus Cornelius Celsus)[5], the Roman author of the *sui generis* encyclopaedia[6], who,

[4] Such interest can already be found in *Corpus Hippocraticum* – K. D e i c h g r ä b e r, *Zur Milchteratpie der Hippokratiker (Epid. VII)*, [in:] *Medizingeschichte in unserer Zeit. Festgabe E. Heischkel-Artel und W. Artel*, ed. H.H. E u l n e r, Stuttgart 1971, p. 36–53; M. C h r o n ē, *Ē panida stēn diatrofē kai stēn iatrikē sto Byzantio*, Athenai 2012, p. 201–226; M. K o k o s z k o, *Galaktologia terapeutyczna (γαλακτολογία ἰατρική) Galena zawarta w De simplicium medicamentorum temperamentis ac facultatibus*, PNH 14.2, 2015, p. 5–23. Modern applications of milk in folk medicine, cf. M. A b d a l l a, *Milk and its Uses in Assyrian Folklore*, [in:] *Milk*..., p. 9–18 (esp. 11–13).

[5] This extract includes the research included in the Polish article: M. K o k o s z k o, J. D y b a ł a, *Medyczna nauka o mleku (γαλακτολογία ἰατρική) zawarta w De medicina Celsusa*, PNH 15.2, 2016, p. 5–43, and its English versions: i i d e m, *Medical Science of Milk Included in Celsus' Treatise De medicina*, SCer 6, 2016, p. 323–353; i i d e m, *Milk in Medical Theory Extant in Celsus' De medicina*, JFSE 6.5, 2016, p. 267–279.

[6] Surely, Celsus must have been an amateur in the field of medicine – V. N u t t o n, *Ancient Medicine*, London–New York 2005, p. 5. And one of many in the Roman world, as we learn from Dioscorides (*filiatroúntes* – D i o s c o r i d e s, V, 19, 3, 2) and Galen (*filofármakos* – G a l e n, *De compositione medicamentorum per genera*, 636, 2, vol. XIII). The phenomenon of interest in medicine during the time of the Roman Empire has been fairly recently examined by Ido Israelowich (*Patients and Healers in the High Roman Empire*, Baltimore 2015, p. 73), also cf. C.F. S c h u l t z e, *Aulus Cornelius Celsus – Arzt oder Laie? Autor, Konzept und Adressaten der De medicina libri octo*, Trier 1999, *passim*.

under the reign of emperor Tiberius (14 AD – 37 AD), composed a work consisting of, in all probability, 26 books[7], only eight of which have survived until today[8].

From the perspective of studies on the role of milk, it is invaluable that the author of *De medicina* presents numerous thoughts on the contemporary diet of the day. This Roman scholar also indicated that this issue was of interest to the branch of medicine called dietetics, i.e., *diaitetiké*[9], which was divided into sub-branches, namely into speculative and empirical dietetics[10]. Following the methodology adopted by his Greek predecessors, Celsus felt obliged to present the most important types of food by compiling a relatively systematic description of their nutritive and curative functions, since he believed that both were tightly entwined, which, *nota bene,* was a centuries-old doctrine propagated by the Greeks, whose achievements this Roman author relied upon. Not surprisingly then, Celsus refers to a great number of Greek medical authorities[11], and his knowledge of Hellenic thought is also revealed in the Latinised terminology he uses[12].

The details of Celsus' teachings on milk and its derivatives are scattered throughout the treatise. Some can be found in Book II, which contains an interesting extract regarding detoxification procedures.

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[7] Their full content, apart from medicine, also focused on agriculture and animal husbandry, rhetoric, military art, philosophy and law.

[8] On Celsus and his work, cf. F. M a r x, *Prolegomena*, [in:] *Cornelii Celsi quae supersunt*, ed. F. M a r x, p. I–XXV; B.S. S p i v a c k, *A.C. Celsus: Roman Medicus*, JHM 46.2, 1991, p. 143–157; C. O s e r-G r o t e, *Celsus*, [in:] *Antike Medizin. Ein Lexikon*, ed. K.-H. L e v e n, München 2005, cols. 189–191; A. G a u t h e r i e, *Physical Pain in Celsus' On Medicine*, [in:] *'Greek' and 'Roman' in Latin Medical Texts Studies in Cultural Change and Exchange in Ancient Medicine*, ed. B. M a i r e, Leiden–Boston 2014, p. 137–154, etc.

[9] C e l s u s, I, *Proemium*, 9.

[10] C e l s u s, I, *Proemium*, 11.

[11] Cf. W. D e u s e, *Celsus im Prooemium von "De medicina": Römische Aneignung griechischer Wissenschaft*, [in:] *ANRW*, vol. II, 37, 1, Berlin–New York 1993, p. 819–841.

[12] D.R. L a n g s l o w, *Celsus and the Makings of a Latin Medical Terminology*, [in:] *La médecine de Celse. Aspects historiques, scientifiques, et littéraires. Mémoires du Centre Jean Palerne*, vol. XIII, eds. G. S a b b a h, P. M u d r y, Saint-Étienne 1994, p. 297–318; S. S c o n o c c h i a, *Aspetti della lingua di Celso*, [in:] *La médecine...*, p. 281–296.

The author informs the reader that were there to be a need to remove undesired substances from the body, either enemas or two types of oral medicaments could be used, i.e., laxative and emetic agents. Milk was classified among the first type in the second group, i.e., as a laxative. The desired effect could be triggered by animal milk (though not human), and more specifically by milk from donkeys, cows and goats, while its efficacy was intensified by adding salt to the milk. What we also learn from Celsus is that milk was considered a complex substance, in which the active agent is one of its constituent commonly known as whey (in Latin: *serum*, and in Greek: *or*[*r*]*ós*)[13]. The author also took the opportunity to explain the method used to separate curd from whey. This effect was obtained by the process of heating milk, which led to coagulation and thereby separation of the whey, which was later administered to patients. The writer also maintained that the procedure of purging the body by means of milk was considered safer than other approaches (since alternative methods entailed the application of substances characterised by a more radical effect). As a result, whey-based cleansing was prescribed for feverish patients. Finally, the author added that whey not only led to the softening of the intestines (the contents of which were excreted from the body), but it also possessed a nutritive function[14].

The passage presented above contains much important information. Celsus believed that milk was a mixture of, at least, two components, which made it a nourishing substance with an additional therapeutic effect. It must be emphasised that, even though the discussed excerpt contains no precise characteristics of either milk or its components, the author actually refers here to the medical theory in which these two components had been determined and accepted. Celsus indicates that milk curd possesses specific nutritional values which it shares with whey, and it is the combined virtues of both these products that contribute to the general esteem in which milk as a useful substance was held. From the fact that the author of *De medicina* particularly recommended whey for the purposes of purification of the gastrointestinal system,

[13] Cf. for instance – G a l e n, *De alimentorum facultatibus*, 684, 16 – 685, 6, vol. VI.
[14] C e l s u s, II, 12, 1 a–c.

it might be concluded that curd was commended as a substance which possessed different properties to *serum*. Since whey was described as an active laxative, it may also be surmised that curd was considered by physicians to have a constipatory effect. The text suggests that there is also some justification in supposing that the analogical characteristics could also be attributed to cheese made from curd, since it was a derivative. Thus, on the basis of this narrative, we could venture the conclusion that, as far as pharmacological properties were concerned, cheese could not be used as a laxative since it had the same properties as milk curd. It is also worth noting that one of the constituents of milk was never listed in the analysed extract; even though Celsus was undoubtedly well aware of its existence. This ingredient is fat, used to produce butter (Latin: *buturum/butyrum*). On the other hand, as butter had been, on numerous occasions, listed by Celsus among substances used in therapeutics, it must have been described in the theory on the basis of which his treatise was composed. The examined extract also makes it possible to conclude that milk itself could change its properties, depending on the percentage of the individual constituents. Their amount was conditioned by the type of milk (as suggested by the note that milk could be obtained from various animal species) and modified by the chosen processing technology. Last but not least, the therapeutic effect of milk could be intensified through the addition of other substances, e.g., salt – as mentioned by Celsus[15].

The formulated conclusions may seem exaggerated due to the generality of the analysed extract from *De medicina*. They are, however, fully confirmed in the fragment of the work in which Celsus discusses the role of foodstuffs as a significant element of diet, which, in fact, constitutes a catalogue of foods classified in accordance with the dominant characteristics of a given product (similar to the already mentioned catalogues composed by, for instance, Oribasius[16] and Aëtius of Amida[17]). It must also be added that the dietetic characteristics compiled by Celsus

[15] Salt intensified the purgative effect of milk.

[16] Cf. pages 6-9.

[17] As above.

refer, directly or indirectly, to all the aforementioned dairy products, with the exception of butter. Since butter was described exclusively in regard to its pharmacological properties, it can be concluded that the medical theory applied in *De medicina* treated it not as a foodstuff but as a medicament.

Let us now move on to present Celsus' doctrines as they appear in his treatise. Firstly, the author draws the reader's attention to the high nutritional value of milk[18], also including cheese in the same food group. Celsus confirms his absolute certainty on this point by qualifying baked cereal products which were prepared with dairy additives as an element of a diet with analogical properties[19]. He maintains that milk and soft (*mollis*, i.e., fresh) cheese belong to the group of foodstuffs with good juices (*boni suci* [*alimenta*])[20], whereas mature (*vetus*) cheese is categorised among those foodstuffs which were said to be characterised by bad juices (*mali suci* [*alimenta*])[21]. Milk is also classified as a food with delicate juices, devoid of any sharpness (*lenes*)[22] and considered a drink that thickens sputum (*crassiorem pituitam facit*)[23]. In addition, milk and all types of cheese are classified as foodstuffs that may upset the stomach (*aliena stomacho*)[24]. Moreover, any food which it is added to, including cheeses, is categorised as a class of food that sours easily (*facile/faciliter intus corrupta*) inside the stomach[25]. Next, Celsus returns to the subject he has already discussed in the introduction to *De medicina*, by reminding the reader that milk itself and any foodstuffs to which it is added accelerate bowel movements (*alvum movent*), i.e., they stimulate excretion[26]. Finally, we can also find information that cheese which is sharp in taste, no matter how this feature developed (as the author puts it, no matter whether it could be due to its age, a change in its properties

[18] C e l s u s, II, 18, 11.
[19] C e l s u s, II, 18, 2.
[20] C e l s u s, II, 20, 1.
[21] C e l s u s, II, 21.
[22] C e l s u s, II, 22, 2.
[23] C e l s u s, II, 23.
[24] C e l s u s, II, 25, 1.
[25] C e l s u s, II, 28, 1.
[26] C e l s u s, II, 29, 2.

during transportation[27], or boiling it in honey or water with honey[28]), has a constipatory effect, inhibiting the functioning of the digestive system (*astringit*)[29].

The selected milk products appear in yet another catalogue, this time within Book V of the analysed encyclopaedia, as elements of classes of therapeutically active ingredients. For the purposes of our discussion, it is worth commenting on the fact that although the group of medicaments listed therein contains milk and butter, cheese and whey are omitted. This absence is not, however, justified by the author in any way. Perhaps the sources he used did not specify them as part of the categorisation in which we are currently interested. Nevertheless, it must be stated that the lack of any mention of these products does not mean that Celsus disqualified their usage in medical procedures. As has already been explained, whey was an element of laxative treatments, in which it was referred to as *lac*. Cheese, in turn, was included in the treatment of aphthous ulcers, which means that it was applied in a therapeutic method known to Celsus. Since this was not a common usage, however, one can surmise that this product was mainly perceived by the author as a foodstuff. What also must be added here is the fact that, in subsequent Greek medical sources, cheese was invariably classified as *fármakon*, which is confirmed by evidence quoted later in this text[30]. Therefore, it seems possible that medical study into cheese was posterior with regard to the state of medical knowledge Celsus profited from. Referring back to the *materia medica* information from *De medicina*, it must be stated that milk was listed in the treatise as being among those substances which were capable of dissipating harmful agents that can accumulate in any given part of the body[31]. What is more, milk is also classified as a medicament which can allevi-

[27] Delivery time was probably another factor that enabled the product to ripen and mature.

[28] This statement is abstruse. Perhaps it refers to the cheesemaking technology later mentioned by Dioscorides. Cf. the section of this book devoted to the analysis of *De materia medica*.

[29] C e l s u s, II, 30, 2.

[30] Cf. further sections of this book.

[31] C e l s u s, V, 11.

ate irritations[32]. Butter is also mentioned with regard to two categories. Firstly, we can read that it is one of the therapeutic agents which lead to tissue growth and result in filling post-ulcer cavities (*carnem alens*; *ulcus implens*)[33]. Secondly, it is also included in the class of mollifying medicines (*molliens*)[34], i.e., substances reducing all kinds of hardenings.

When completing this synopsis, one must emphasise the fact that descriptions of milk and its derivatives, focusing on both their sitology and their properties as *fármakon*, are not an exclusive attribute of *De medicina*, since they are regularly found in medical literature, both earlier as well as posterior to Celsus' teachings. We can find it in *De diaeta*, *I–IV* (5th/4th c. BC)[35], in the output of Dioscorides[36], Rufus of Ephesus (1st/2nd c. AD)[37], Galen[38], Oribasius[39], Aëtius of Amida[40], and Paul of

[32] C e l s u s, V, 13.

[33] C e l s u s, V, 14.

[34] C e l s u s, V, 15.

[35] Since information is limited and terminology partly differs from what we find in later texts, galactology in the treatise seems to be in its *statu nascendi*. Cf. milk – *De diaeta*, II, 41; whey – *De diaeta*, II, 42; cheese; the fat constituent of milk (the base to produce butter) – *De diaeta*, II, 51. On the Hippocratic regimen, cf. J.M. W i l k i n s, *Hippokratic Corpus, Regimen (ca 430 – 370 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists. The Greek Tradition and its Many Heirs*, eds. P.T. K e y s e r, G. I r b y-M a s s i e, London–New York 2008, p. 416–417.

[36] Cf. further sections of this book.

[37] The entirety of his works has not survived, but they are later quoted in the writings by medical authors. On the physician, cf. S. I h m, *Rufus v. Ephesos*, [in:] *Antike Medizin...*, cols. 759–760; J. S c a r b o r o u g h, *Rufus of Ephesos (ca 70 – 100 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 720–721; M. B u j a l k o v á, *Rufus of Ephesus and his Contribution to the Development of Anatomical Nomenclature. Rufuz iz Efeza i njegov doprinos razvoju anatomiskog nazivlja*, AMHA 9.1, 2011, p. 89–100; M. L e t t s, *Rufus of Ephesus and the Patient's Perspective in Medicine*, BJHP 22.5, 2014, p. 996–1020. For the purpose of the present discussion, I would call Rufus of Ephesus one of the key witnesses to the development of ancient galactology, and refer to some examples of his topical competence, cf. milk – R u f u s o f E p h e s u s, *De renum et vesicae morbis*, II, 19, 1 – 21, 7; R u f u s o f E p h e s u s, *De satyriasmo et gonorrhoea*, 28, 5; O r i b a s i u s, *Collectiones medicae*, II, 61, 1, 1 – 10, 2; O r i b a s i u s, *Synopsis*, I, 40, 1, 1 – 6, 3; A ë t i u s o f A m i d a, II, 86, 1 – 87, 15; cheese – R u f u s o f E p h e s u s, *De satyriasmo et gonorrhoea*, 28, 5. Cf. further sections of this book.

[38] Cf. further sections of this book.

[39] As above.

[40] As above.

Aegina[41] as well as in *Historia naturalis* by Pliny (1st c. AD)[42]. This reveals that the subject was considered important from a medical point of view and interesting for both medical doctors and a wider audience[43]. All sources display doctrinal uniformity, which seems to suggest that they were based on the same or analogous teachings in the field of *materia medica*. Their origin, however, has still to be discovered.

When moving on to discuss the details of the therapeutic application of milk, it must be indicated that *De medicina* contains a substantial amount of information on milk in the treatment of ancient patients. Lengthy as it may seem, I have decided to introduce a list of topical cures because I think it is the only way to demonstrate how common a medicament milk was in the 1st c. AD. Accordingly, it – and Celsus does not specify what kind here – was recommended for patients with permanent weight loss that was a symptom of the disease known by the Latin term *phthisis*, i.e., consumption. What can also be concluded from the text is the fact that milk was regularly added to soups served to consumptives (e.g., to the popular soup called *ptisáne*, which, in Cicero's language, was referred to as *tisana*[44]), to spelt flour pulp, and to a dish

[41] As above.

[42] P l i n y, XXVIII, 123, 1 – 135, 3 (milk – XXVIII, 123, 1 – 130, 11; whey – XXVIII, 126, 2 – 128, 1; cheese – XXVIII, 131, 1 – 132, 7; butter – XXVIII, 133, 1 – 134, 6 *oxygala*– XXVIII, 135, 1–3). Pliny, by virtue of his interest in *Historia naturalis*, very often refers to foods, the knowledge of which he borrows from ancient, mostly Greek medical writings. As a result, his work has become a piece of crucial evidence in reconstructing patterns of medical knowledge transmission, and especially in tracking down the history of *materia medica* development. On his connections with ancient medicine, for instance, cf. M. W e l l m a n n, *Sextius Niger, eine Quellenuntersuchung zu Dioscorides*, H 24, 1889, p. 530–569; J.H. P h i l l i p s, *Juxtaposed Medical Traditions: Pliny HN 27.131*, CP 76.2, 1981, p. 130–132; M. J o n e s-L e w i s, *Pharmacy*, [in:] *A Companion to Science, Technology, and Medicine in Ancient Greece and Rome*, ed. G.L. I r b y, vol. I–II, Malden, Mass.–Oxford 2016, p. 406, 408.

[43] Medical knowledge seems to have been of interest for a large number of educated people. On the reasons for the phenomenon cf. J. D r a y c o t t, *Roman Domestic Medical Practice in Central Italy*: *From the Middle Republic to the Early Empire*, London–New York 2019, p. 38–39.

[44] M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, *Kilka słów o zupie zwanej ptisane (πτισάνη)*, ZW 18, 2013, p. 282–292.

made from starch (Latin: *amulum*/*amylum*, Greek: *ámylon*)[45]. On the other hand, the author adds that milk should be completely avoided when patients were suffering from acute fever and outbursts of thirsts triggered by high body temperature; when their chest was swollen, when their urine contained traces of bile, or when they were bothered by haemorrhages[46]. Instead, as late as on the fourth or fifth day of treatment, patients were administered – in addition to spicy foods – a mug of therapeutic juice made from broadleaf plantain (*Plantago maior* L.), or a spoonful of juice made from white horehound (*Marrubium vulgare* L.) boiled with honey. Moreover, another applicable medication was the natural resin of terebinth (*Pistacia terebinthus* L.), boiled with the addition of butter and honey[47].

Milk was also part of the treatment procedure in healing a malady which manifested itself in breathing difficulties. Greeks called its mildest form *dýspnoia*, its more acute variant *ásthma*, and its most dangerous manifestation *orthópnoia*[48]. The cure recommended by Celsus included bloodletting and using milk as a laxative to cleanse the colon, and, if these methods failed, the application of enemas[49].

Equally, milk was prescribed for patients suffering from throat ulceration[50]. They were advised to avoid spicy dishes and foods characterised by a rough texture, and to opt for milk as well as honey, lentils, a dinkel wheat soup called *tragum*, a barley soup called *tisane*, fatty meat, and a leek decoction[51].

Undoubtedly, one of the most common ailments of that time was a cough, several types of which were distinguished, including productive and non-productive ones[52]. Regardless of the variant, Celsus recommended a lifestyle full of travelling, with a particular focus on sea

[45] C e l s u s, III, 22, 11.
[46] C e l s u s, III, 22, 10.
[47] C e l s u s, III, 22, 13.
[48] C e l s u s, IV, 8, 1.
[49] C e l s u s, IV, 8, 2.
[50] *In interiore vero faucium parte exulceratio* – C e l s u s, *De medicina*, IV, 9, 1.
[51] C e l s u s, IV, 9, 3.
[52] C e l s u s, IV, 10, 1.

voyaging[53]. He also suggested dwelling by the sea and taking regular baths in seawater. As far as diet was concerned, Celsus advised the reader to opt for both mild and spicy foods. Among the former, he recommended mallows and young nettle tips; as for the latter, the Roman listed milk boiled with garlic; soups with the addition of asafoetida (*laser*) or sliced leek, and soft-boiled eggs with a sprinkling of sulphur. As far as drinking habits were concerned, Celsus encouraged patients to choose pure water first, and then alternate between water or wine daily[54].

When a patient had a disease of the spleen, manifesting itself through its enlargement, a swelling on the left side of the body, tension in the abdominal area, swollen legs, etc., milk and cheese[55], as well as sweets, were completely excluded from the nutrition plan[56], while still being advised to consume all types of sour drinks and foodstuffs, and particularly sharp wine vinegar, or vinegar with sea onion (*Squilla maritima* L.), which should be sipped regularly. Other administered foods included salted fish, olives in a strong pickle sauce, lettuce and endive spiced with vinegar, beetroots with mustard, and, when it came to meat, dishes made from legs (*ungulae*), dewlap (*rostra*), lean poultry (*aves macrae*) or game[57].

A different treatment was offered to those suffering from chronic colic – an ailment called *colitis* (Greek: *koiliaké diáthesis*), whose symptoms included stomach aches, the inability to expel the gases accumulated within the intestines, constipation, a lower temperature in the

[53] A form of medical procedure called *aióra*. Cf. M. K o k o s z k o, *Medycyna bizantyńska na temat aiora (αἰώρα), czyli kilka słów o jednej z procedur terapeutycznych zastosowanych w kuracji cesarza Aleksego I Komnena (na podstawie pism medycznych Galena, Oribasiusa, Aecjusza z Amidy i Pawła z Eginy)*, [in:] *Cesarstwo bizantyńskie. Dzieje, religia, kultura. Studia ofiarowane Profesorowi Waldemarowi Ceranowi przez uczniów na 70-lecie Jego urodzin*, eds. P. K r u p c z y ń s k i, M.J. L e s z k a, Łask–Łódź 2006, p. 87–111.

[54] C e l s u s, IV, 10, 4.

[55] This is Celsus' only dietetic recommendation referring explicitly to cheese.

[56] C e l s u s, IV, 16, 1.

[57] C e l s u s, IV, 16, 2. On dangers related to the consumption of milk – K. A l b a l a, *Milk: Nutritious and Dangerous*, [in:] *Milk...*, p. 19–30; F. B l a n k, *Milk-Borne Diseases: An Historic Overview and Status Report*, [in:] *Milk...*, p. 81–85; H. M o r r o w B r o w n, *The Health Hazards of Milk*, [in:] *Milk...*, p. 259–267.

limbs, and breathing difficulties[58] – and involved applying warm compresses, inducing vomiting in order to empty the stomach, and cupping therapy of the underbelly and the hip area[59]. In order to induce purgation, the sick were served pure milk or milk with water, mixed in a one-to-one ratio. Celsus' remark on the dosage is quite interesting, since it allows us to determine the amounts of milk administered to patients. Namely, we learn that they were served – most likely on a daily basis – between two and three ladles (*cyathi*) of milk, and if need be, the same measure of milk mixed with an equivalent amount of water. Since one ladle (*cyathus*) had a capacity of 42 cubic centimetres, i.e., approximately 0.042 litres, four *cyathi* meant a daily intake of milk amounting to approximately 0.170 litres, meaning it was less than a standard tumbler today. One must also remember that this amount was administered to induce purgation in patients with a particular ailment, which means that the average daily intake of milk must have been lower for healthy members of society. Additionally, since it was believed that an increase of pressure in the bowels greatly facilitated the expulsion of intestinal gases, grated garlic was added to the milk. Further recommendations included *aióra* (e.g., in the form of sea voyages), embrocating olive oil with soda, rinsing in warm water, applying poultices made from mustard to the limbs (which resulted in skin reddening, i.e., a procedure called *sinapismós*), and many other therapeutic measures[60].

Milk was also served in treatments aimed at curing ophthalmological disorders. Celsus wrote that a common symptom accompanying eye infections was the occurrence of ulcers on eyeballs and eyelids. In order to treat them, patients were given enemas and advised to follow diets that entailed a limited consumption of food, while drinking more milk. The Roman author claimed that this beverage neutralised the sharpness of the juices which caused the ailment[61]. Milk was also mentioned in the treatment administered to patients suffering from *phthirisis* (Greek: *ftheiríasis*). Celsus reported that this disorder afflicted patients who, as

[58] C e l s u s, IV, 19, 1.
[59] C e l s u s, IV, 19, 2.
[60] C e l s u s, IV, 19, 3.
[61] C e l s u s, VI, 10.

a result of their poor personal hygiene, had lice in their eyelashes and whose eyes oozed a purulent secretion of an irritant nature that could lead to the ulceration of the eyeball and, in extreme cases, even to vision loss. Patients were purified with enemas, and then had their hair cut and heads massaged. Other recommendations included fasting, vigorous walks, mouthwashes with *mulsum* (hot wine with honey), often with the addition of catmint and figs, warm baths, and washing the head with hot water. The diet should be based on soothing foodstuffs, and, among drinks, milk and sweet wine were recommended, as they were expected to neutralise the sharp (and thus irritating) juices generated during the disease[62].

De medicina also contains a substantial number of uses on milk as a simple therapeutic substance or as an ingredient of more complex medicines. Let us commence by saying that when reading Celsus' treatise we can learn that this *medicamentum* could be applied both internally and externally. In the analysed text, we find a remark that milk was considered to be an antidote to poisons, especially weaker ones. For instance, it was served without any additives to people poisoned with cantharidin, i.e., a substance obtained from the cantharis fly (*Cantharis vesicatoria*)[63]. Another treatment included the application of a concoction made from milk with a powdered plant called *panaces* (*Ferula galbanifera* Mill.), or galbanum, (i.e., a gum resin produced by the plants *Ferula galbanifera* Mill. and *Ferula rubricaulis* Boiss.), and dissolved in wine[64]. And in the case of poisoning with black henbane (*Hyoscyamus niger* L.), all types of milk were recommended – donkey milk, or hot wine with honey, *mulsum* in particular[65].

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[62] C e l s u s, VI, 6, 15–15 b.

[63] On the substance and insects producing it (the cantharis fly and the buprestis beetle [Greek: *boúprestis*]), cf. M. D a v i e s, J. K a t h i r i t h a m b y, *Greek Insects*, New York–Oxford 1986, p. 91–94; L. M o e d, T.A. S h w a y d e r, M.W. C h a n g, *Cantharidin Revisited: A Blistering Defense of an Ancient Medicine*, ADer 137.10, 2001, p. 1357–1360.

[64] C e l s u s, V, 27, 12.

[65] C e l s u s, V, 27, 12 b. Cf. A. T o u w a i d e, *La toxicologie dans le De medicina: un système asclépiado-méthodique?*, [in:] *La médecine...*, p. 211–256.

Celsus also classified milk as a substance that could be used for the therapeutic washing of the throat and oral cavity (as an alternative to *tisana* and a chaff brew)[66]. In this form, milk was applied in the final stage of tonsillitis[67]. It is worth mentioning here that the only time Celsus refers to the therapeutic application of cheese, he also speaks of the oral cavity and its disorders, as he indicates that canker sores (Latin: *aphthae*) recurring in children's mouths were healed by covering them with cheese – fresh, we can presume, and blended with honey[68].

Another common ailment reported in the Greek and Latin source texts was dysentery. Celsus wrote that, in general, affected patients needed rest. The treatment involved appropriately prepared poultices which could stop diarrhoea, applied to the stomach; washing the anus with lukewarm water previously boiled with common verbena (*Verbena officinalis* L.)[69], and enemas, among which Celsus recommended a *clyster* made from thin *tisana* or milk. Other procedures included applying melted animal fat, deer bone marrow, olive oil, and rose attar mixed with butter (another dairy product of interest here) or egg white, as well as many other substances[70]. Celsus also indicated that Themison of Laodicea (1st c. BC)[71] even recommended using a special brine for storing olives. And as far as diet was concerned, Celsus opted for styptic foodstuffs[72].

In the field of gynaecology described by the Roman scholar, milk was used to treat hysteria. First of all, the fruit of black nightshade (*Solanum nigrum* L.) was dipped in milk and later crumbled, together with white wax, deer bone marrow (blended with iris oil), or beef suet

[66] C e l s u s, V, 22, 9.

[67] C e l s u s, VI, 10, 4.

[68] C e l s u s, VI, 11, 3.

[69] C e l s u s, IV, 22, 2.

[70] C e l s u s, IV, 22, 3.

[71] On the physician, cf. S. I h m, *Themison v. Laodikeia*, [in:] *Antike Medizin...*, cols. 849–850; J. S c a r b o r o u g h, *Themisōn of Laodikeia (Syria) (ca 90 – 40 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 782–783.

[72] C e l s u s, IV, 22, 4.

(or goat suet mixed with rose oil) and converted into an ointment that was applied as a softening agent (an emollient) to the patient's distended underbelly (*super imum ventrem*)[73]. Moreover, the therapeutic procedure involved voiding the patient's bowels, induced by enemas or drinking milk[74]. Celsus also wrote that breast milk was utilised to produce a vaginal suppository used to provoke menstruation. In order to make it, breast milk was mixed with the frittered inside of wild cucumber (*Cucumis silvestris*)[75]. Next, this substance was used to soak soft wool, which was later inserted into the genitals[76].

Milk was also one of the substances used in ancient nephrology. The author of *De medicina* claimed that patients suffering from kidney disorders should rest a lot, sleep on a soft bed, regularly cleanse their bowels, even by means of enemas, take hot baths, avoid cold food and drink, and refrain from tasting anything salty, sour or spicy[77]. The recommended treatment also involved the application of a medication made from wild cucumber seeds, pine nuts, anise and saffron, served in sweet *mulsum* wine. Any patients complaining of pain were administered a medicine consisting of thirty seeds of squirting cucumber (*Ecballium elaterium* [L.] A. Rich.), twenty pine nuts, five almonds (*nuces Graecae*), and a pinch of saffron (*crocus*). These ingredients were ground and mixed with milk[78].

As far as external applications are concerned, we learn from Celsus that the joint disorders of both the upper and lower limbs which accompanied such diseases as gout or chiragra (Latin: *cheragra*, Greek: *cheirágra*) were treated by drinking donkey milk, which, in this case, was considered a medicament *sensu stricto*. However, what we can conclude from this Roman's text is that this medicine was only effective in the early stages of the disease. It is also worth noticing that other similarly effectual procedures included abstinence from wine, *mulsum* and sex[79]. In more advanced stages, patients were advised to be more active, to pay

[73] C e l s u s, IV, 27, 1.
[74] C e l s u s, IV, 27, 2.
[75] C e l s u s, V, 21 b, 1.
[76] C e l s u s, V, 21 a.
[77] C e l s u s, IV, 17, 1.
[78] C e l s u s, IV, 17, 2.
[79] C e l s u s, IV, 31, 1.

visits to bath houses, and to soak their painful limbs in hot therapeutic solutions[80]. At times, wet cooling therapies were also administered, especially when an elevated temperature was recorded in the afflicted body parts[81]. When the pain was so intense that it was even unbearable for the patient to touch sore spots, relief was brought by sponging them with a hot infusion made from skin peeled off a poppy-head or the root of wild cucumber (*Cucumis silvestris*)[82]. Next, the patients were smeared with saffron, poppy juice and sheep milk[83]. Celsus also added that those aware of the fact that their joint aches were of a seasonal nature should ward them off by following a special diet which protected against the harmful substances in food. For this purpose, they were advised to use emetics and cleanse their bowels by drinking milk. The author of *De medicina* stated that although the latter method was rejected by Erasistratus (4th/3rd c. BC)[84] as it could increase the accumulation of harmful juices in the feet of patients with gout, Celsus himself considered such a fear to be groundless, since the said measures led to the voiding of juices from both the upper and lower parts of the body[85].

Milk was also an ingredient of those solutions aimed at facilitating the healing of wounds[86]. According to Celsus, when uncontrolled hyperplasia of tissue was observed on a wound's edges, measures were taken to stop this process by means of dry lint (*siccum linamentum*) or copper shavings (*squamae*) applied to the dressed area. If, however, the hyperplasia was more aggressive, solutions that decomposed the offending tissue were applied. The dressing was removed, and the wound was washed with a decoction made from buckthorns dissolved in *passum* wine or milk, since this procedure was expected to accelerate cicatrisation[87].

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[80] C e l s u s, IV, 31, 3–4.

[81] C e l s u s, IV, 31, 5.

[82] Probably another name for squirting cucumber.

[83] C e l s u s, IV, 31, 6.

[84] On the physician, cf. K.-H. L e v e n, *Erasistratos v. Keos*, [in:] *Antike Medizin*..., cols. 265–267; J. S c a r b o r o u g h, *Erasistratos of Ioulis on Keōs (ca 260 – 240 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 294–296.

[85] C e l s u s, IV, 31, 9.

[86] On the issue within Celsus' output – I. I s r a e l o w i c h, *Patients...*, p. 96–97.

[87] C e l s u s, V, 26, 30 c.

Milk was also added to compound medicines used in ophthalmology. Celsus remarked that breast milk was an ingredient of the eye ointment which in Latin was called *collyrium*, added to soothe any irritating effect of the medicament. He indicated that it was also used to modify the balsam called *cycnon* (or *tephron*)[88], and added to another balm which was known as *trygodes*[89]. Both medicaments were applied to eyes in cases of relatively acute inflammations. Moreover, an unspecified milk was mentioned by Celsus as an ingredient of other medications within the same group. In the treatise, we read about a very severe eye inflammation called *proptosis*, which manifested itself with a swelling that made the eyeballs look as if they were about to pop out of their sockets. It could lead to vision loss accompanied by a purulent secretion oozing from the outer corner of the eye, i.e., on the side of the temple, if so, a surgical procedure was conducted. An incision in the eyeball was performed to create an outlet for the accumulated pus, to alleviate the pain, and to prevent disfigurement. After the surgery, Cleon's (2nd/1st c. BC)[90] or Nileus' (3rd c. BC)[91] *collyrium* was crumbled and mixed with milk or eggs[92] to soothe its effect, and then applied to the eye. What is more, in the case

[88] *Cycnon/tephron* consisted of starch, milkvetch and acacia juice, *cummis* rubber, poppy juice, washed white lead (Latin: *cerussa*) and lead oxide processed in the same manner. Once mixed, these ingredients were usually blended with rainwater. In the case specified by Celsus, the latter was substituted with breast milk – C e l s u s, VI, 6, 7. This medicament was also known to Galen (*De compositione medicamentorum secundum locos*, 795, 4–10, vol. XII) and to Aëtius of Amida (VII, 106, 75–80).

[89] *Trygodes* consisted of castoreum, a decoction made from buckthorns, nard, poppy juice, saffron, myrrh, aloe, burnt copper, *cadmia* clay, antimony sulfide, acacia juice and *cummis* rubber – C e l s u s, VI, 6, 8. It was also known to Galen (*De compositione medicamentorum secundum locos*, 713, 9–10, vol. XII).

[90] On the physician, cf. P.T. K e y s e r, *Kleōn (of Kuzikos?) (100? – 20 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists*..., p. 481.

[91] On the physician, cf. G. I r b y-M a s s i e, *Neileus (255 – 215 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists*..., p. 569.

[92] C e l s u s, VI, 6, 9 b–c.

of eye ulceration, Philalethes' (1st c. BC/1st c. AD)[93] *collyrium*[94] was used, ground with milk[95].

Breast milk was also added to medicaments aimed at treating ear infections, e.g., a drug made from Egyptian bean (*Nelumbium speciosum* Willd.) pestled with rose oil and myrrh, or juice made from bitter almonds with the addition of the same ingredients[96]. After these medicaments were inserted into the ear, the auricle was sealed with a swab to prevent the liquid from seeping out[97]. And when the ear was swollen with an oozing secretion, an unspecified type of milk mixed with a buckthorn infusion was poured inside[98].

Finally, it is worth mentioning that – alongside rose oil – milk was also utilised in cranial surgery. Drops of both liquids were supposed to facilitate bone penetration[99] for trephination (*modiolus*[100]) by reducing friction.

While medical applications of whey can only be conjectured on the basis of those extracts where Celsus refers to the laxative effect of milk, from his remarks, we may conclude that butter was an ingredient of numerous medicaments applied externally, especially in therapies aimed at healing wounds and ulcerations. For instance, it was one of the constitu-

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[93] On the physician, cf. H. von Staden, *Alexander Philalethes*, [in:] *Herophilus: The Art of Medicine in Early Alexandria*, ed., transl., essays H. von Staden, Cambridge–New York–New Rochelle–Melbourne–Sydney 1989, p. 532–539; G. Irby-Massie, *Alexander of Laodikeia on the Lukos, Philalēthēs (20 BCE – 25 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists*..., p. 56.

[94] Philalethes' *kollýrion* consisted of myrrh, poppy juice, washed lead, clay of Samos, milkvetch juice, antimony sulphide, starch, washed zinc oxide and washed white lead – Celsus, VI, 12.

[95] Celsus, VI, 12.

[96] Celsus, VI, 7 e.

[97] Celsus, VI, 7 c.

[98] Celsus, VI, 7, 3 b–4.

[99] Celsus, VIII, 3, 3. Cf. I. Mazzini, *La chirurgia celsiana nella storia della chirurgia greco-romana*, [in:] *La médecine*..., p. 135–166.

[100] Celsus, VIII, 3, 1.

ents of *enneapharmacum*[101], used for clearing wounds. The ingredient list included wax, milk, suet, resin, myrrh, rose oil, bone marrow (deer, calf, or ox), lanolin, and butter, mixed in equal proportions[102]. It is also noteworthy to mention that in order to clean and fill a wound to the tendon, after the pus had already been removed, a slightly less complex medication was applied, i.e., butter mixed with powdered rose petals and a dash of honey[103]. We also read about *buturum* as an ingredient of the so-called *enchrista*[104], or – as explained by Celsus – liquid medicaments used to treat ulcerations in *neúra*, e.g., tendons. One such medicine consisted of equal portions of butter, calf bone marrow and fat, goose lard, wax, honey, terebinth resin, and castor and rose oils. And when the latter was substituted with alkanet oil, the medicament also became an emollient, i.e., it efficiently mollified concretions[105]. It is also worth highlighting those extracts within Celsus' writings which prove that butter was used in medicaments applied to treat those delicate and sensitive body parts which are not normally visible. Therefore, it can be found in therapies aimed at healing damage to the cerebral meninges. The author of the discussed treatise claimed that, in cases where they swell so significantly that they became visible, emerging from the wound and rising above the surface of the skull, physicians would apply powdered lentil or grapevine leaves mixed with fresh butter or goose lard to the inflamed spots, which was supposed to reduce the swelling[106].

Celsus' work also provides information that butter was suitable for treating male and female genitals. A recommended treatment of metritides was to administer Numenius' (3rd c. BC)[107] medication, which

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[101] Greek doctors were well familiar with this medicament. Cf. for instance G a l e n, *De compositione medicamentorum secundum locos*, 310, 15 – 311, 5, vol. XIII; O r i b a s i u s, *Eclogae medicamentorum*, 146, 17, 1–3; A ë t i u s o f A m i d a, XVI, 82, 16–19; P a u l o f A e g i n a, VII, 24, 6, 1–3.

[102] C e l s u s, V, 19, 10.

[103] C e l s u s, V, 26, 30.

[104] This term was known, for instance, to Oribasius (*Libri ad Eunapium*, III, 34, 4, 4).

[105] C e l s u s, V, 23, 3.

[106] C e l s u s, VIII, 4, 19.

[107] On the physician, cf. J.-M. J a c q u e s, *Noumēnios of Hērakleia (270 – 230 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 583.

included saffron, wax, butter, goose lard, boiled egg yolks, and rose oil[108]. As far as the treatment of ulcerations to the penis were concerned, if the ulceration was dry, the organ was bathed in warm water, and then butter with rose oil, or a decoction made from box-thorn or *amurca* mixed with wine was applied. When ulcers suppurated slightly, they were washed with wine, followed by the application of a mixture of butter, rose oil, honey and terebinth resin to the sores[109].

Conclusions

As for conclusions, the results of the presented analysis make it possible to recognise Celsus' work as a treatise competent in the field of galactology, i.e., well-grounded within the output of Greek medical thought. By the time Celsus composed his work, teachings on milk had already been shaped into a coherent theory which included both its dietetics as well as *materia medica*. What is more, Celsus' encyclopaedia shows that, by the same period, milk and its derivatives had been consistently used in a high number of cures, including complex surgical procedures. All the above-mentioned facts appear to prove that by the first part of the 1st c. AD theories on the uses of dairy products already had a long history, which must have been moulded by many medical doctors. Unfortunately, Celsus' work gives no reliable clues as to the origin of this corpus of knowledge, naming neither its author nor the time of its creation. Nevertheless, it is plausible that he extensively profited from the teachings of the school of Asclepiades of Bithynia (2nd/1st c. BC)[110],

[108] C e l s u s, V, 21, 4.

[109] C e l s u s, VI, 18, 2 c.

[110] About the physician, cf. M. W e l l m a n n, *Asklepiades (43)*, [in:] *RE*, vol. II, Stuttgart 1896, cols. 1633–1634; J. S c a r b o r o u g h, *The Drug Lore of ASCLEPIADES of Bithynia*, PhH 17.2, 1975, p. 43–57; J. V a l l a n c e, *The Medical System of Asclepiades of Bithynia*, [in:] *ANRW*, vol. II, 37, 1, Berlin–New York 1993, p. 693–727; R. P o l i t o, *On the Life of Asclepiades of Bithynia*, JHS 119, 1999, p. 48–66; V. N u t t o n, *Asclepiades (6)*, [in:] *BNP*, vol. II, Leiden–Boston 2003, cols. 96–98; S. I h m, *Asklepiades v. Bithynien*, [in:] *Antike Medizin...*, cols. 107–108; J. S c a r b o r o u g h, *Asklēpiadēs of Bithunia (in Rome, ca 120 – 90 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 170–171; J. D r a y c o t t, *Roman Domestic...*, p. 48–49.

which, interestingly and importantly, at a broadly similar time, were included in the work on *materia medica* composed by Sextius Niger (1st c. AD)[111].

Celsus' work, however, is not only a medical encyclopaedia. It is also worth emphasising that, due to their substantive content of realia, his treatise has become important not only for the history of medicine *sensu stricto*, but it is also a significant source of materials providing information on gastronomy and the techniques applied in agriculture and animal husbandry. What is more, it also sheds some light on how often (and in which quantities) individual foodstuffs within the group under discussion were consumed. This aspect of Celsus' treatise *De medicina*, generally leads us to the conclusion that milk was only drunk in small amounts, which can be justified by the intake indicated therein – cited in the present study. One may also speculate that this limited role in diet applies to, first and foremost, educated residents of urban areas, who would have been the target reader of the analysed text. This group was most probably of at least moderate means, since we can assume that its members could afford to choose whatever foodstuffs they would like to include in their diet. In cities, milk of adequate freshness must have been difficult to obtain, as can be concluded from the remark that it would easily coagulate when boiled (as slightly soured milk does). Therefore, it comes as no surprise that we usually come across this drink in its slightly spoiled, i.e., fermented form, and thus, it is a foodstuff classified as a product that is easily acidified in the stomach and demonstrates a laxative effect. The latter effect may also lead us to the conclusion that the majority of society at that time had problems digesting milk, i.e., they showed signs of lactose intolerance. The quoted dietetic characteristics also prove that various methods were applied to extend the shelf life of milk, including the addition of salt, and heating. Let us note that fresh milk would have been significantly easier to obtain in the countryside than in urban areas, as the bulk of it was produced there.

[111] On Sextius Niger cf. my comments on Dioscorides and Galen's sources.

Animals listed as providers of milk were donkeys[112], sheep[113] and cows[114]. Since donkeys were also used for transportation, they, owing to their exertion due to the physical strain imposed by carrying large and heavy loads, could offer smaller amounts of milk, which is why it was mainly used for specialist therapies. What is more, donkey milk was not held in high regard by dieticians. For instance, Galen, over a century later, described it as watery and almost devoid of any fat, and that such characteristics indicated that its nutritional value was virtually non-existent from the dietetic point of view. This was by no means true when it came to sheep and cow milk, however, which were highly valued as foodstuffs[115]. One can conjecture that Galen's views were related to the preferences of milk consumers during his lifetime, and thus, to the availability of this product on the market. If true, in the 2nd c. AD, the milk obtained from sheep and cows was significantly more popular than that of donkeys. There is, however, no evidence demonstrating that the pattern of husbandry presented by this doctor from Pergamum differed considerably from that depicted by Celsus.

Butter played no crucial role in diets, as proved not only by the substantive content of *De medicina*, but also by the fact that Galen decided against providing a detailed description of it within *De alimentorum facultatibus*, i.e., his most significant dietetic work. Instead, he included its characterization in *De simplicium medicamentorum temperamentis ac facultatibus*, which was a treatise devoted to simple medications, in which butter was classified as *fármakon*. The conclusion corresponds with those one may draw from other medical works as well as from the encyclopaedia composed by Pliny.

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[112] On the animals and products derived from them – M. C h r o n ē, *Ē panida...*, p. 90–91, 362, 395–395.

[113] Information on sheep – Z. R z e ź n i c k a, *Rola mięsa w diecie w okresie pomiędzy II a VII w. w świetle źródeł medycznych*, [in:] *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część II, *Pokarm dla ciała i ducha*, ed. M. K o k o s z k o, Łódź 2014, p. 249–257.

[114] *Ibidem*, p. 266–279.

[115] G a l e n, *De alimentorum facultatibus*, 681, 11 – 682, 2, vol. VI (thickness of milk and animal species which provided milk; donkey milk – 682, 1, vol. VI; sheep milk – 682, 2, vol. VI; cow milk – 681, 14, vol. VI); 684, 7–9, vol. VI (fat content in milk and; donkey milk – 684, 9, vol. VI; sheep milk – 684, 8, vol. VI; cow milk – 684, 7, vol. VI).

As for cheeses, Celsus conveys far more information on those varieties which were eaten in their fresh, and thus less durable, form, than on more mature products with a greater lifespan (which resulted from the process of aging). On the other hand, we can learn from his text that the latter were also present on the market and, being suited for transportation, were delivered over great distances. One may speculate that the export of such cheeses was only profitable if they could be sold for an appropriately high price. Thus, we might expect that by the time *De medicina* was written, the widely known types of cheese had already taken their final shape, were being made according to an established recipe and delivered to recipients residing far away from their place of production. Such conclusions seem to be justified also on the basis of analogies found in later works, and especially in *Historia naturalis*. As can be concluded from Celsus' remarks, cheese was particularly significant in culinary art, and the information on how it was prepared indicates that a variety of methods were applied to modify its flavour.

What is more, since the galactology described in *De medicina* had been developed before the 1st c. BC, the teachings of this branch of medicine provided an insight into what had been eaten until that time. The works by Galen, who was a shrewd observer of everyday life and often verified encountered theories against his own experience[116] (which, together with those of his followers, will be tackled in the next chapter of this book), can also be perceived as testimonies of their time. After Oribasius, however, we only come across repeated and already established dietetic and pharmacological doctrines regarding milk, which calls into question the credibility of later medical treatises as a source of accurate information on the reality contemporaneous to their authors.

[116] For instance, when discussing the raw material from which butter is made, he entered into a dispute with a recognised authority in the field of *materia medica*, i.e., Dioscorides (whose other opinions he generally valued and respected). Namely, he expressed his surprise at the fact that the doctor of Anazarbus had suggested that butter was made from goat and sheep milks, since Galen knew it could also be made from cow milk and the term itself came from the noun *boús* – G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 272, 12–15, vol. XII. Cf. D i o s c o r i d e s, II, 72, 1, 2–3.

Nevertheless, there is a possibility that Oribasius, as well as Aëtius of Amida and Paul of Aegina, wrote down doctrines which were already considered classical at that time, because changes to the portfolio of available foodstuffs and methods of their production were minimal or even non-existent. If so, early Byzantine physicians were most likely to select and convey to future generations those constituents of the theory that they considered to be applicable in their own medical practice.

Finally, and interestingly, the recommendations in *De medicina* regarding milk and dairy products lack any references to luxurious spices or exotic foodstuffs. Therefore, there is every likelihood that the dietetic data included within the text reflects a consumption pattern typical for the lower and middle urban social classes[117], which makes this work an excellent reference material for studies on the everyday life of a broad social stratum[118].

3. Theory on milk and dairy products in *De materia medica* by Dioscorides

Another comprehensive list of characteristics of milk and dairy products was compiled by Dioscorides and can be found in his treatise entitled *De materia medica*[119].

Little is known, however, about the life of Pedanius Dioscorides himself. A native of Anazarbus (Cilicia), he lived in the 1st c. BC, during the reign of Nero, and often travelled in search of medicinal substances across the whole Mediterranean region[120]. Dioscorides is the

[117] On a middle class in the city of Rome, the likely addressees of Celsus' medical advice, cf. J. D r a y c o t t, *Roman Domestic...*, p. 28–29. Their regimen, cf. *ibidem*, p. 50–55.

[118] A similar conclusion cf. *ibidem*, p. 54.

[119] D i o s c o r i d e s, II, 70, 1, 1 – 72, 3, 9.

[120] J.M. R i d d l e, *Dioscorides on Pharmacy and Medicine*, Austin 1985, p. 1–19. Other scholarship on Dioscorides' life and work, cf. J.M. R i d d l e, *Byzantine Commentaries on Dioscorides*, DOP 38, 1984, p. 95–102; M. S t a m a t u, *Dioskurides*, [in:] *Antike Medizin...*, cols. 227–229; J. S c a r b o r o u g h, *Dioskouridēs of Anazarbos (ca 40 – 80 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 271–273; K. D u r a k, *Dioscorides*

author of one major work which has achieved renown in the history of medicine, namely, the aforementioned *De materia medica*. It focused on substances used in ancient pharmacopoeia, i.e., *haplá fármaka*, also enumerating common ailments and illnesses which were treated by means of these substances. There is one more work that is sometimes also ascribed to Dioscorides. It is known by the title *Euporista sive de simplicibus medicinis* and it systematises virtually the same simple medicines which were tackled in *De materia medica* with regard to the specific ailments (arranged from the head to the foot) they were used to address. It is still unestablished whether the treatise is a genuine work by Dioscorides or a writing by an anonymous author composed, presumably, one or two centuries later. Originally, Max Wellmann, in his entry in *Real-Encyclopaedie,* termed it as pseudo-Dioscoridean and argued that it was written in the 3rd or early 4th c. AD[121]. However, his later research prompted him to change his position and defend Dioscorides' authorship of the work (though he also admitted that it was fraught with later interpolations)[122]. The issue is so difficult to resolve that even John Marion Riddle, the most prominent contemporary specialist on Dioscorides, and Ann Tess Osbaldeston, the author of a faithful translation of *De materia medica*[123], have remained cautious enough not to pronounce a final verdict[124]. Despite this, it is undeniable that *Euporista sive de simplicibus medicinis* was compiled by an author who was familiar with the corpus of *materia medica* theories Dioscorides adhered to and

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and Beyond Imported Medicinal Plants in the Byzantine Empire, [in:] *Hayat Kısa, Sanat Uzun Bizans'ta Şifa Sanatı. Life is Short, Art Long: The Art of Healing in Byzantium*, ed. B. P i t a r a k i s, Istanbul 2015, p. 153–160; M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, J. D y b a ł a, *Pedanius Dioscorides' Remarks on Milk Properties, Quality and Processing Technology*, JAS.R 19, 2018, p. 982–986.

[121] M. W e l l m a n n, *Dioskurides aus Anazarbos in Kilikien*, [in:] *RE*, vol. V, Stuttgart 1905, col. 1140.

[122] M. W e l l m a n n, *Die Schrift des Dioskurides Peri haplōn farmakōn: Ein Beitrag zur Geschichte der Medizin*, Berlin 1914, p. 38–57.

[123] A.T. O s b a l d e s t o n, *Introduction*, [in:] D i o s c o r i d e s, *De materia medica*, ed., transl. A.T. O s b a l d e s t o n, Johannesburg 2000, p. XXI. Cf. Ch.J. S i n g e r, *The Herbal in Antiquity and its Transmission to Later Ages*, JHS 47, 1927, p. 19, note 45.

[124] J.M. R i d d l e, *Introduction*, [in:] *Dioscorides...*, p. XXVI–XXVII.

thus represented a similar (if not identical) way of medical reasoning. Therefore, the treatise may be considered to be a witness to the popular acceptance of Dioscorides' teachings.

As for Dioscorides' contribution to *materia medica*, the results of his research were a permanent component of the lectures on medical theory available for future generations (both in antiquity as well as later), due to the author's competence, the clarity of composition displayed in the treatise, and the approachable language of exposition. As shown by the history of medicine, they were excellently applied by theoreticians and practitioners of medicine, influencing medical studies for nearly two thousand years.

There is still, however, one remark to be made. It is highly probable that Dioscorides borrowed at least some of his information on milk from Sextius Niger, who, some thirty of forty years before the author from Anazarbos, and probably parallelly to Celsus, composed, in Greek, his treatise *Perí hýles*[125]. In order to justify the hypothesis, however, one has

[125] The most detailed research into Sextius Niger and his work comes from the end of the 19th and the first part of the 20th c., cf. M. W e l l m a n n, *Sextius Niger...*, p. 530–569; K. D e i c h g r ä b e r, *Sextius Niger*, [in:] *RE*, Supplementband V, Stuttgart 1931, cols. 971–972. One should notice that, having analysed similarities between *Materia medica* by Dioscorides and *Historia naturalis* by Pliny the Elder, Max Wellmann (*Sextius...*, p. 548) was keen to consider the former to be *nicht anders als alle die Compilatoren der nachchristlichen Jahrhunderte*, owing the bulk of his expertise to Niger. Although there has been no major development in the study of Niger's influence on ancient and Byzantine *materia medica* ever since, his work is occasionally acknowledged in modern scholarship. Although John Marion Riddle (*Dioscorides...*, p. 14–19), seems to appreciate his role as an eminent naturalist, he is not prone to accepting Max Wellmann's view. Nicholas Everett (*Sources Compared and Lost*, [in:] *The Alphabet of Galen: Pharmacy from Antiquity to the Middle Ages. A Critical Edition of the Latin Text with English Translation and Commentary*, ed., transl. N. E v e r e t t, Toronto 2012, p. 70–74) regards his work as a piece of ancient research which could have been made use of by the anonymous author of *Alphabetum Galeni* (composed between the 4th and the 6th c. AD). Recently Sextius' impact was discussed by Gavin Hardy and Laurence Totelin (*Ancient Botany*, Abingdon–New York 2016, p. 50–51) in the context of the history of botany in antiquity and was mentioned by M. Eleanor Irwin (*Greek and Roman Botany*, [in:] *A Companion to Science...*, p. 276). In modern research he also appears as a personage important for the development of pharmacy, as he was referred to, for instance, by Moly Jones-Lewis (*Pharmacy*, p. 406).

to turn to Pliny's output, who made use of Niger's work for the purpose of compiling his *Historia naturalis*. It is due to Pliny that we can be certain that Sextius Niger was an expert in the theory of milk, because his name is given by the naturalist in the list of domestic authors from whom he borrowed information to compile Book XXVIII (where he discussed the subject), and he is mentioned as the main source when Pliny elaborated on the term *hippace* – which was mare's milk or the cheese obtained from it[126]. Moreover, due to the fact that at least one passage from Galen's output, namely his discussion on curdling milk in *De alimenatorum facultatibus*[127], includes an analogy[128] to passages penned by Dioscorides[129] and Pliny[130], one can surmise that Niger's treatise was also known to Galen, who also admitted having read his work[131]. Accordingly, although the issue requires further research, on the basis of the presented premises it can be concluded that Sextius Niger's expertise had a profound influence upon the ancient theory of milk in the form we know from Dioscordies, Galen and his followers.

The characteristics of milk (*gála*) compiled by Dioscorides can be found in Book II of *De materia medica,* and it surpasses Celsus' writings in its detail. Dioscorides provides a description of milk as a foodstuff, praising it for its good juices, nutritional values and the ability to soften the digestive tract[132]. However, he also adds that milk contributes to the accumulation of gases in the stomach and intestines. Since the society in which he was living had a close relationship with the countryside and was familiar with the realities of rural life (and work), another remark comes as no surprise. Namely, Dioscorides states that milk obtained in spring contains more water than in summer. What is more, he also indicates that milk from animals feeding on fresh green grass

[126] P l i n y, XXVIII, 131, 2–4.

[127] G a l e n, *De alimentorum facultatibus*, 694, 10–14, vol. VI.

[128] All the authors mention a vessel used in the process of boiling milk.

[129] D i o s c o r i d e s, II, 70, 4, 1–10.

[130] P l i n y, XXVIII, 126, 4 – 127, 4.

[131] For instance – G a l e n, *De antidotis*, 7, 2, vol. XIV.

[132] The author simply meant that milk induces defaecation, which, in turb, leads to the reduction of the feeling of fullness in the intestines. Thus, equally to Celsus, he treated milk as a laxative.

has a stronger laxative effect. Recapping the introductory part of his text, the author states that the physical properties that distinguish good-quality milk are a white colour and uniform thickness, and that the latter can be determined by a simple test, in which one measures the time a milk drop takes to travel down one's fingernail[133].

Dioscorides provides a definitive list of the most popular types of milk, including an exhaustive description of the priorities of animal husbandry at the time. He commences his disquisition with goats, which were probably the most common milk animals in the Mediterranean region, claiming that their milk appears to be less upsetting for the digestive system, since they feed on food characterised by styptic properties[134], such as leaves and branches of the lentisk (*Pistacia lentiscus* L.), oak, olive and terebinth (*Pistacia terebinthus* L.), and thus, their milk has a beneficial influence upon the stomach[135]. These statements are intriguing in the face of the aforementioned testimony that milk was classified as a foodstuff frequently responsible for digestive discomfort. Dioscorides clearly explains that goat milk contributed to this ailment to a lesser extent, a statement which should be seen as indicating a general tendency towards lactose intolerance in ancient society, since goat milk is the least allergenic, and is therefore permissible in the diet of people lacking the digestive enzyme lactase[136].

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[133] D i o s c o r i d e s, II, 70, 1, 1–5.

[134] Such food reduces the purgative effect of milk.

[135] I.e., it does not have a strong purgative effect.

[136] Nowadays, goat milk is perceived as easily digested, and it is usually allowed to be drunk by people allergic to cow milk since it does not contain large amounts of lactose or casein, which are responsible for allergic reactions. The aforementioned establishments on difficulties in drinking milk are reinforced by modern genetic, anthropological and archaeological research, which certifies (despite their fragmented nature and only recent developments in the field) that Neolithic and then Hellenic societies of Greece and the eastern shoreland of the Mediterranean Sea did not develop lactose tolerance, in contrast to northern European peoples; this trend – despite fluctuations and numerous migrations, continues today – cf. e.g., G.G. H a r r i s o n, *Primary Adult Lactase Deficiency: A Problem in Anthropological Genetics*, AAnth 77, 1975, p. 812–835 (esp. 815, 817, 821); S. L a d a s, J. P a p a n i k o s, G. A r a p a k i s, *Lactose Malabsorption in Greek Adults: Correlation of Small Bowel Transit Time with the Severity of Lactose Intolerance*, Gut 23, 1982, p. 968–973; D.M. S w a l l o w, *Genetics of Lactase*

When describing sheep milk as thick, sweetish, and containing great amounts of fat, Dioscorides remarked that it was not as beneficial to the stomach[137] as goat milk[138]. He also stated that the milk of the donkey, cow and mare was good for the digestive system, with a reservation that they might still cause digestion problems[139]. While commenting on this extract, it can be legitimately concluded that – since there is no information on how common it was to breed horses[140] and donkeys[141] for their milk – the author of *De materia medica* must be listing the three species which were bred for milk, and that the order in which they appear in the text is by no means coincidental as it corresponds with data on the same subject recorded by other authors.

Persistence and Lactose Intolerance, ARG 37, 2003, p. 197–219; P. Anagnostou, C. Battaggia, V. Coia, C. Capelli, C. Fabbri, D. Pettener, G. Destro-Bisol, D. Luiselli, *Tracing the Distribution and Evolution of Lactase Persistence in Southern Europe through the Study of the T–13910 Variant*, AJHB 21, 2009, p. 217–219; A. Perino, S. Cabras, D. Obinu, L. Cavalli Sforza, *Lactose Intolerance: A Non-Allergic Disorder Often Managed by Allergologists*, EAACI 41.1, 2009, p. 3–16; Y. Itan, A. Powell, M.A. Beaumont, J. Burger, M.G. Thomas, *The Origins of Lactase Persistence in Europe*, PLoS.CB 5.8, 2005, p. 1–13; Y. Itan, B.L. Jones, C.J.E. Ingram, D.M. Swallow, M.G. Thomas, *A Worldwide Correlation of Lactase Persistence Phenotype and Genotypes*, BMC.EB 10, 2010, p. 1–11; P. Gerbault, A. Liebert, Y. Itan, A. Powell, M. Currat, J. Burger, D.M. Swallow, M.G. Thomas, *Evolution of Lactase Persistence: An Example of Human Niche Construction*, PTRS.BS 366, 2011, p. 863–877 (esp. 866 et seq.); M. Leonardi, P. Gerbault, M.G. Thomas, J. Berger, *The Evolution of Lactase Persistence in Europe. A Synthesis of Archaeological and Genetic Evidence*, IDJ 22, 2012, p. 88–97; J. Rocha, *The Evolution of Lactase Persistence*, APor 29, 2012, p. 121–137 (esp. 123 et seq.); S.P. Morris, *Dairy Queen: Churns and Milk Products in the Aegean Bronze Age*, Opus 7, 2014, p. 205–222 (esp. 215); N. Silanikove, G. Leitner, U. Merin, *The Interrelationships between Lactose Intolerance and the Modern Dairy Industry: Global Perspectives in Evolutional and Historical Backgrounds*, Nut 7, 2015, p. 7312–7331 (esp. 7315); Z. Hofmanová et al., *Early Farmers from across Europe Directly Descended from Neolithic Aegeans*, PNAS 113, 2016, p. 6886–6891 (esp. 6887).

[137] I.e., it has a relatively strong purgative effect.

[138] Dioscorides, II, 70, 1, 8–9.

[139] Dioscorides, II, 70, 1, 10–11. Thus, they are all strongly purgative.

[140] Although *De materia medica* does not contain a dietetic evaluation of mare's milk, it was explicitly stipulated in Galen's *De alimentorum facultatibus*, where mare's milk is described as watery and virtually devoid of fat – Galen, *De alimentorum facultatibus*, 681, 15 – 682, 1, vol. VI.

[141] The low value of donkey milk was discussed in the section devoted to Celsus' text.

Dioscorides also added that when animals were fed the bindweed called scammony, false hellebores, annual mercury (*Mercurialis annua* L.) or clematis, the resulting milks led to disorders of the stomach and digestive tract, which we learn that he heard of happening in the mountainous regions within the country of the Vestines. There, goats grazed on leaves of white hellebore (*Veratrum album* L.). Despite vomiting them up instantly, the ensuing milk had an exceptionally strong laxative effect and induced nausea.

As far as processing milk is concerned, Dioscorides has very little to say about it. He does, however, testify that it was exposed to high temperatures and, once boiled, it led to constipation, which was particularly true for milk that was thickened by the addition of hot stones[142]. Naturally, what Dioscorides has in mind here is procedures applied not only by medics, and we can conclude that the main purpose of such techniques was not only to produce a medicament, but also to prolong the shelf life of a foodstuff prone to spoilage.

The therapeutic properties of milk were listed as follows. Milk is helpful in treating internal ulceration and tissue damage, especially in the larynx, lungs, intestines, kidneys and bladder, as well as pruritic skin irritations, efflorescence, and disturbances of humoral balance. Fresh milk is served with boiled honey and small amounts of water and salt. When boiled, milk becomes less carminative. If a patient suffers from ulcerations within the digestive system caused by an inflow of undesired juices, they should drink milk boiled down to half of its initial capacity by means of hot stones[143].

Milk was also served to alleviate the effects (the author lists painful erosions and burns) of such poisons as cantharidin, a substance obtained from the buprestis beetle (*boúprestis*)[144], the venom of the fire salamander, a poison acquired from black henbane – a certain type of bindweed (*Convolvulus oleifolius* L.) – aconite and autumn crocus (*Colchicum autumnale* L.)[145]. According to Dioscorides, cow milk – which proved very

[142] Dioscorides, II, 70, 2, 7–8.
[143] Dioscorides, II, 70, 2, 8 – 3, 5.
[144] It could be equally obtained from the Spanish fly.
[145] Dioscorides, II, 70, 5, 1–4.

effective at counteracting toxic agents – was also particularly effective when used as a wash applied to ulcerations of the oral cavity and tonsils[146], whereas donkey milk was considered most powerful as a mouthwash administered for gum issues and loose teeth[147]. Ulcerations within the digestive system caused by an influx of unwanted juices and painful constipation, were treated with sheep, cow and goat milk, with hot stones put in the vessel containing the milk. The liquid was administered in the form of an enema, made from the milk itself or a mixture of milk combined with either watery *ptisáne* or an infusion made from *chóndros* groats. This medicament was very effective in alleviating pain, and – in a similar formula – it could also be injected into an ulcerated uterus[148].

Breast milk was believed to be the sweetest and most nutritious. It alleviated stomachaches, cured *fthísis*, and counteracted the toxic effect triggered by drinking a poisonous substance obtained from lumpfish. Dioscorides claimed that when mixed with powdered incense, breast milk could be used as eye drops to treat haemorrhages occurring after a blow. It was also applied to sores resulting from gout, having been previously mixed with hemlock (*Conium maculatum* L.) and a *keroté*-type[149] ointment.

There were also contraindications to the application of milk, which Dioscorides claimed to be inappropriate for people with spleen and liver disorders, and for those suffering from headaches, dizziness and ailments related to hard tissue, as well as for epileptics. In such cases, it was, however, permissible to administer milk with the curd (*tyródes*) removed (i.e., *schistón*) in order to induce purgation[150].

Next, Dioscorides focused on discussing a number of overheard opinions with which he may not have agreed. Thus, he mentioned the belief that dog's milk from an animal that had given birth for the very first time

[146] Dioscorides, II, 70, 5, 4–6.
[147] Dioscorides, II, 70, 5, 6–7.
[148] Dioscorides, II, 70, 5, 7–12.
[149] Dioscorides, II, 70, 6, 1–5.
[150] Dioscorides, II, 70, 6, 6–9.

was supposed to soften (or remove) hair when applied to pilose spots, and to act as a counter poison when taken orally. Some also claimed that it triggered the abortion of dead foetuses[151].

Although Dioscorides did not include a comprehensive explanation of the classification system of milk constituents, he clearly indicated it was not a homogenous substance, and all its components were listed and described. The physician began with whey, which – once extracted – was useful whenever there was a need for a mild laxative effect, i.e., when excretion of content lingering within the digestive system was to be induced without the application of more radical agents[152]. He also added that non-invasive procedures were required in the treatment of melancholia, epilepsy, leprosy, elephantiasis, and efflorescences appearing all over the body[153]. In order to obtain whey, one had to bring about the coagulation of milk, which was often done by boiling it in a ceramic bowl and stirring with a freshly cut fig branch. While boiling the milk, one had to add a dash of *oksýmeli*, observing the proportion of one *kýathos* of *oksýmeli* for one *kotýle* of milk. This approach made the whey easy to separate from the curd. One also had to be very careful not to overboil milk, which could be prevented by repeatedly wiping the edge of the vessel with a sponge moistened in cold water. During the process, it was also common to immerse a silver vessel filled with cold water in the boiling milk. A single *kotýle* of whey was to be drunk regularly. Between each dose, the patient was supposed to take a stroll, and advised not to exceed the amount of five *kotýlai*[154]. What makes this extract interesting is the fact that not only does it demonstrate the procedures applied by doctors in obtaining *fármaka* and treating their patients, but also, in all probability, it refers to the methods used in the regular production of cheese,

[151] Dioscorides, II, 70, 6, 9–12. An analogical and yet more elaborate passage can be found in Galen's *De simplicium medicamentorum temperamentis ac facultatibus* (269, 4–15, vol. XII), though Galen unambiguously evaluates such statements as untrue. The similarity of statements uttered by both may lead to the conclusion that Dioscorides and Galen used a source text of analogical contents, possibly the work by Sextius Niger.

[152] Some of them (e.g., hellebore) have already been mentioned in this part of the text.

[153] Dioscorides, II, 70, 3, 6–10.

[154] Dioscorides, II, 70, 4, 1–10.

and specifically it describes the technology of obtaining curd without the use of animal rennet (but with the application of plant rennet, i.e., fig juice). These methods must have been standardised and commonly profited from, since similar mentions can be found in other medical source texts. Naturally, a fundamental technology used in cheesemaking during Dioscorides' time was an approach based on obtaining milk curd through the addition of animal rennet, as proved by his remarks on the production of cheese made from mare's milk.

Milk curd was the raw material used to produce cheese. Dioscorides writes that fresh, unsalted cheese was considered nutritious, beneficial to the stomach, easily digestible and contributed to tissue growth, while having a mildly purgative effect. The occurrence of particular features of various types of cheese depended on the kind of milk used to produce it[155]. Boiled cheese (i.e., cheese made from milk curd exposed to high temperatures – most likely by adding hot water or by heating up milk [or whey]), which was first squeezed and then baked, had a constipatory effect[156]. When used as a cataplasm, it healed eye inflammations and dark circles under the eyes[157]. Fresh, salted cheese was less nutritious, but suitable for purifying soft tissues, while having a negative impact on the stomach, the digestive system and intestines. A more mature cheese of this type showed a constipatory effect while its whey made ideal dog food[158]. Dioscorides concludes his teachings on cheese referring to so-called *hippáke* (i.e., *hippace* in Latin). We learn that it was a cheese produced from mare's milk. It had a strong odour and was very nutritious, just like products made from cow milk. Some also used this term to describe the rennet obtained from horse stomachs[159].

Last but not least, the medical author turns to butter. Not even mentioning cow milk as its source, Dioscorides argued that it was not only made from full-fat sheep milk, but also from that obtained from goats. He also describes (though quite superficially) the technology of

[155] Dioscorides, II, 71, 1, 1–4.
[156] Dioscorides, II, 71, 1, 4–5.
[157] Dioscorides, II, 71, 1, 5–6.
[158] Dioscorides, II, 71, 1, 6–9.
[159] Dioscorides, II, 71, 1, 10–12.

its production, writing that it was made by shaking milk until the fat was separated[160]. The vast majority of his paragraph on butter has been devoted to its application in medical procedures. Dioscorides maintained that, because butter had a softening effect, it worked similarly to olive oil, leading to the purgation of the digestive system when drunk in large amounts, which means that butter was seen as a mere substitute of the latter, used only if olive oil was temporarily unavailable. When mixed with honey and rubbed into a sore spot, it alleviated the pain related to tooth eruptions experienced by young children, as well as other gum irritations, including aphthae. When applied to the skin, it nourished and protected the body against *psydrákia*, i.e., pustules. It also eliminated inflammations and hardenings of the uterus, though not those accompanied by a bad smell and chronic. Butter could also be injected into the body of patients suffering from dysentery and ulcerations within the large intestine. It was also mixed with agents facilitating the accumulation and excretion of pus from the body, especially if the purulence was the effect of damage to hard tissue, the meninges or bladder. What is more, butter could also induce the repair and cleansing of wounds, and help victims of a viper bite. Finally, the author strays from medicine, and adds a remark which reflects culinary realia, mentioning the fact that butter was added to some dishes instead of olive oil, and could substitute for lard in baking[161].

The fragment calls for a commentary. First, one can surmise that cow milk butter is absent from Dioscorides' characterization because the author's description does not refer to the specifics of the butter production in the whole Mediterranean but rather concerns its sun-scorched and mountainous eastern parts (including the region of Anazarbus, where Dioscorides grew up), which tend to be hardly accessible to cows but welcoming to sheep and goats. Second, this passage from *De materia medica* appears to confirm the conclusion drawn from Celsus' teachings that butter was primarily treated as a medicament. Dioscorides,

[160] D i o s c o r i d e s, II, 72, 1, 1–4. A more detailed description of the technology is provided by Pliny. Cf. the passage of the present book devoted to butter in cuisine.

[161] D i o s c o r i d e s, II, 72, 1, 5 – 2, 8.

however, recognises its limited alimentary role. Third, the author suggest that, although not as popular as olive or lard, butter was, in fact, more versatile than either of them, as it could be made use of (instead of the former) to prepare dishes that were commonly eaten with bread, i.e., so-called *ópsa*, or to be used for baking.

Butter was also used to make a curative soot. It was poured into a brand-new lamp which was then lit and covered with a ceramic vessel that tapered towards the top, with some holes at the bottom. The lamp would burn until it ran out of the first portion of fat, which was followed by adding another one for as long as necessary. The accumulated soot on the walls of the vessel, later removed with a feather, was believed to have the power to desiccate the juices responsible for eye diseases, and to have a mild styptic effect and the ability to repair and cicatrise wounds[162].

Conclusions

Recapping on the preceding deliberations on *materia medica*, it should be concluded that Dioscorides' teachings on milk do not differ from those presented by Celsus, since both authors referred to a similar or the same doctrine which they knew in its already established form. Neither is there a difference between Celsus' and Dioscorides' therapeutics. We may surmise then that the similarity stems from the fact that both owed their knowledge to the same corpus of medical knowledge canonised by Asclepiades of Bithynia and his followers (for instance, Sextius Niger).

De medicina and *De materia medica* also draw the same picture of milk-animal husbandry and food processing. One can notice that the manner of presentation and content differ little from those we can discover in *De re rustica* by Varro. In *De materia medica*, goats, sheep and cows are the major providers of milk, and the product itself is presented as the main raw material used in cheesemaking. There is no indication that in the second half of the 1st c. AD fresh milk was con-

[162] Dioscorides, II, 72, 3, 1–9.

sumed more frequently or in greater amounts than at the beginning of the period. Moreover, doctors used the same technologies to increase its shelf life (boiling, adding salt or honey), and to extract its components for later use in their medical practice.

Cheese seems to have been a commonly used product, available in a wide range. Dioscorides enriched our knowledge on the subject by expressing an important remark regarding cheesemaking procedures that involved heat processing. This technology appears to be analogical to methods applied today in the production of mozzarella and/or halloumi. Interestingly, this product was also baked, which indicates that the tradition of grilling cheese is certainly cole to (or even over) two thousand years old. What is more, the information provided in *De materia medica* confirms the variety of cheesemaking technologies and the abundance of cheese types. Thus, cheese was made with or without heating the curd, with or without the addition of salt, and was consumed immediately after its production or following a period of ripening.

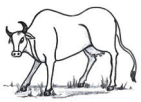
Dioscorides also clearly points to the role of butter in the diet eaten within the region of the Mediterranean Sea he was familiar with, although indicating its secondary importance. It was produced from various types of milk, by extracting fat through churning. Even though butter was used in cuisine, it was pictured as a substitute for olive oil and lard. On the other hand, the information included in the work also implies that it was widely applied by doctors as a medicament.

4. Conclusions

In the matter of milk and its derivatives, Celsus and Dioscorides represent the same medical tradition. Neither source provides information that would make it possible to determine the time when this tradition had been developed, but it is bound to have been (in its written form) the work of the Greeks. Although the authors of *De medicina* and *De materia medica* seem to utilise the output of different authorities[163],

[163] They both derive from sources characterised by different layouts of content. Celsus had at his disposal a separate list of dietetic and pharmacological descriptions of products,

in terms of approved assumptions, their teachings are the same, which leads us to a supposition that numerous physicians took a keen interest in galactology[164], and that it had been shaped as a doctrinally unified science some time before the 1st c. AD. As for galactology in *De materia medica* itself, it seems probable that the information provided by the author was heavily influenced by Dioscorides' reading of the work by Sextius Niger. Accordingly, it could be surmised that if we knew the latter's sources on milk, we would be also able to say more on the origin of galactology as we know it. Since the pool of knowledge presented by Celsus, Niger and Dioscorides was doctrinally similar (if not identical), it comes as no surprise that their assumptions were not questioned but constituted an excellent basis for the studies conducted by Galen.



and an independent (from the first list) register of therapies arranged according to body part, i.e., *secundum*. On the other hand, Dioscorides had access to the characteristics of products which included a list of therapies.

[164] An additional argument is the extract from Dioscorides' text, in which he writes about the variety of detailed views and opinions (most likely developed by different doctors) on the effect of dog's milk. A dispute on the issue, with a visibly negative attitude, can also be traced in Galen's output.

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II

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Milk in Dietetics, Pharmacology, Therapeutic Procedures and Culinary Art: Galen and his Followers

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1. Galen and later medical authors on the dietetic properties of milk

The dietetic characteristics of milk[1] within *De alimentorum facultatibus* enable us to reflect on the manner in which experts in the medical field perceived the nature of this product. The importance of the work lies in the fact that Galen tries to systematise traditional dietetic knowledge and, as a result, creates a theory of milk and its derivatives in its final form. In a similar way to Celsus and Dioscorides, he includes information which unveils much about the realia of the 2nd c. AD.

As early as in the introduction to his chapter on milk Galen emphasised that it consists of three constituent substances, i.e., whey, milk curd and fat (*liparón*)[2]. He also added that their proportions depend on such

[1] G a l e n, *De alimentorum facultatibus*, 681, 11 – 689, 7, vol. VI.

[2] Analogical data – G a l e n, *De rebus boni malisque suci*, 766, 1–3, vol. VI.

factors as the animal species, the type of fodder, the season of the year, and whether it is raw or heat processed. Referring to the first of the milk constituents, Galen stated that the thickest and fattest is the milk of cows, while that of sheep and goats was less fatty, and the milks of camels, mares and donkeys the wateriest. He explained that the consistency of the foodstuff is conditioned by the percentage of whey, which makes the watery milk of the aforementioned animals, on the one hand, easily digestible, but on the other, not particularly nutritive for the body, and characterised by a laxative effect[3]. On the basis of this statement, we can conclude that milk containing greater amounts of curd was considered by Galen to be difficult to digest, nutritious but also likely to cause constipation[4]. Therefore, it was safer for health, as Galen concluded, to drink milk with a high content of whey. What is more, he remarked that those who drank such milk were less prone to ailments related to kidney stone disease and blockages in the liver[5].

In addition, Galen went on to provide recommendations on what qualities milk should possess in order to be characterised as potentially the highest quality in terms of its therapeutic applications. Above all, he suggested drinking fresh milk that is still warm, and mixed with a little salt and honey. He argued that this drink possesses purgative properties, and – of equal importance – it does not coagulate in the stomach[6].

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[3] G a l e n, *De alimentorum facultatibus*, 681, 11 – 682, 2, vol. VI (the animal species determines the thickness of milk); 684, 7–9, vol. VI (the animal species determines the fat content of milk); 682, 13–15, vol. VI (the influence of whey upon the properties of milk). Analogical remarks on the relation between the properties of milk and the animal species from which it was obtained were also included in Galen's other treatises – G a l e n, *De rebus boni malisque suci*, 765, 8–11, vol. VI; G a l e n, *De victu attenuante*, 117, 1–3. According to the doctrine prevailing at that time, purgative effects of milk were attributed to whey, and thus it was commonly recommended as an effective laxative substance, cf. G a l e n, *De alimentorum facultatibus*, 684, 16 – 685, 6, vol. VI.

[4] On the constipatory effect of low-whey milk, also cf. G a l e n, *De alimentorum facultatibus*, 682, 15–16, vol. VI. Hazards related to the consumption of milk – E. C r a i k, *Hippocratic diaita*, [in:] *Food in Antiquity*, eds. J. W i l k i n s, D. H a r v e y, M. D o b s o n, Exeter 1999, p. 346.

[5] G a l e n, *De alimentorum facultatibus*, 686, 15 – 687, 6, vol. VI.

[6] G a l e n, *De alimentorum facultatibus*, 684, 9–12, vol. VI (fresh and still warm milk with the addition of honey and salt); 683, 5–6, vol. VI (milk with honey and salt).

Next, he discussed its thickness, which was important for the appropriate results from the application of milk in therapeutics. Galen suggested boiling milk, explaining that this type of heat processing thickens it by reducing the amount of whey, and plays an important role in the treatment of patients with stomach disorders caused by the accumulation of sharp, noxious humours, as the procedure minimised its laxative properties[7]. Moreover, later in the text, we also learn that after heating, milk was sometimes diluted with an appropriate amount of fresh water, so facilitating the desired thickness, while at the same time freeing the milk from the laxative properties of whey[8].

In further parts of his treatise, Galen focused exclusively on the description of milk as a homogenous substance. He indicated that as long as it is fresh, milk constitutes one of the best foodstuffs available to man. At the same time, he warned the reader against drinking milk characterised by a bad taste, since it generates harmful juices (i.e., it was *kakóchymon*), and thus, it was unwholesome even for those with a good humoral balance.

He underlined two main reasons for fluctuations in the quality of milk. The first he identified as the source of the milk consumed. As an example, Galen quoted the case of a baby whose body was covered with sores, since it had been fed milk that the author described as *kakóchymon*. The medic believed such symptoms to have stemmed from its wet nurse's inappropriate diet, since other people who dwelled in the same village and its vicinity had also developed an analogical condition, and argued that this phenomenon could be explained by the fact that at that time (i.e., in spring) the people had run out of winter reserves of food and they were forced to eat wild vegetation, which was not nearly

Analogical remarks, cf. G a l e n, *De rebus boni malisque suci*, 767, 11–12, vol. VI. Data justifying the use of the aforementioned additives, cf. G a l e n, *De victu attenuante*, 117, 5 – 118, 1.

[7] G a l e n, *De alimentorum facultatibus*, 682, 15 – 683, 3, vol. VI.

[8] G a l e n, *De alimentorum facultatibus*, 683, 5–10, vol. VI. At the same time, the physician emphasises that this property is typical exclusively in the case of whey, whereas it is lacking in milk curd.

as nutritious as well-balanced foodstuffs[9]. Galen noticed an analogical link between the food and the quality of milk as far as milk animals and their fodder were concerned. The example he produced was his observation that the milk of quadruped creatures that fed on scammony or spurge had particularly strong purgative properties[10].

The other factor that conditioning the quality of milk was the season. Thinnest in spring[11], milk would gradually become thicker and more nutritious (i.e., following the decrease in water present within green fodder) over the coming months and reach its optimum properties in mid-summer[12].

In the final section of analysed passage, Galen deviated from milk qualities in the direction of the impact that milk had on individual body parts, stressing that it was particularly beneficial to internal organs located in the chest, especially the lungs. At the same time, he noted that when drunk too often, milk caused headaches and was unsuitable for organs in the abdominal cavity, since it led to the accumulation of gases[13]. On the whole, Galen considered milk to be a healthy and nutritious beverage, even if it consisted of two substances demonstrating the opposite effect, i.e., laxative whey, which diluted thick humours[14], and costive milk curd, stimulating the production of thick juices. He also once again warned the reader that the latter led to the formation of kidney stones[15]. The physician also drew the reader's attention to the impact of milk on dentition, stating that its excessive consumption was

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[9] Cf. M.J. W i l k i n s, S. H i l l, *Food in the Ancient World*, Malden, Mass.–Oxford 2006, p. 59.

[10] G a l e n, *De alimentorum facultatibus*, 685, 15 – 686, 10, vol. VI.

[11] The author of the treatise stresses here that a similar phenomenon also occurs immediately after birth.

[12] G a l e n, *De alimentorum facultatibus*, 682, 3–8, vol. VI.

[13] The effects of drinking milk on organs within the chest and on lungs, cf. G a l e n, *De alimentorum facultatibus*, 687, 7–8, vol. VI; the effects of drinking milk on the head, cf. G a l e n, *De alimentorum facultatibus*, 687, 8, vol. VI; the effects of drinking milk on organs within the abdominal cavity, cf. G a l e n, *De alimentorum facultatibus*, 687, 8–9, vol. VI.

[14] Analogical data, cf. G a l e n, *De victu attenuante*, 114, 1–3.

[15] G a l e n, *De alimentorum facultatibus*, 688, 2–10, vol. VI.

detrimental to teeth and gums[16]. Moreover, he stipulated that it exposed the former to decay and corrosion and made the latter flabby. In order to avoid such problems after drinking milk, he suggested rinsing the mouth with (diluted or undiluted[17]) wine or *melíkraton*. And as the most effective protection, he first recommended using water mixed with honey, and then rinsing the mouth with astringent wine[18]. All in all, Galen's above reflections, even though they are argued from a dietetic perspective, represent more of a therapeutic manner of exemplification.

The passage presented above became the core of Byzantine dietetic galactology, with analogical data being found in the writings of physicians who were professionally active in the said period[19]. It must be

[16] A fleeting glance at medical sources proves that in the ancient Mediterranean oral diseases and conditions were a common problem. For instance, in Galen's writings one can find a cornucopia of data on medicaments recommended for the treatment of gums (*De compositione medicamentorum secundum locos*, 853, 5 – 854, 15, vol. XII) or in the case of tooth decoy (*De compositione medicamentorum secundum locos*, 848, 5 – 853, 4, vol. XII; 854, 16 – 855, 8, vol. XII; 855, 9 – 858, 16, vol. XII). The same ailments were also a widespread phenomenon in the Byzantine period, for instance, cf. O r i b a s i u s, *Collectiones medicae*, X, 36, 1, 1 – 4, 4; P a u l o f A e g i n a, III, 26, 2, 1 – 3, 3). No wonder that the physicians instructed their patients how to maintain good dental hygiene (e.g. O r i b a s i u s, *Synopsis ad Eustathium filium*, III, 172, 1, 1 – 2, 1; III, 178, 1, 1 – 2, 1; P a u l o f A e g i n a, I, 29, 1, 1–7; III, 26, 5, 1–3; III, 26, 7, 1 – 7, 7). The question of dental health in antiquity and Byzantium has been quite frequently discussed in modern scholarship. For example, cf. Ch. B o u r b o u, *Health and Disease in Byzantine Crete (7th–12th Centuries AD). Medicine in the Medieval Mediterranean*, Farnham–Burlington 2010, p. 44–51; P. G a i l l a r d-S e u x, *Traitement magique des maux de dents à l'époque romaine impériale (Ier–Ve siècles)*, [in:] *Dents, dentistes et art dentaire. Histoire, pratiques et représentations. Antiquité, Moyen Âge, Ancien Régime*, eds. F. C o l l a r d, E. S a m a m a, Paris 2012, p. 191–210; A. G u a r d a s o l e, *L'odontologie dans la littérature médicale d'époque byzantine: héritage galénique et éléments originaux*, [in:] *Dents, dentistes...*, p. 45–59; J. J o u a n n a-B o u c h e t, *L'art dentaire à Rome: Enquête chez Celse et Scribonius Largus*, [in:] *Dents, dentistes...*, p. 169–189; A. D e m i r e l, *Dental Health and Diet in Byzantine Anatolia*, [in:] *Life is Short, Art is Long: The Art of Healing in Byzantium. New Papers*, eds. B. P i t a r a k i s, G. T a n m a n, Istanbul 2018, p. 227–238.

[17] However, the physician warns the reader that the use of non-diluted drink may lead to a headache.

[18] G a l e n, *De alimentorum facultatibus*, 688, 11 – 689, 7, vol. VI.

[19] On the reception of Galen's teachings by Byzantine medical authors, for instance, cf. V. N u t t o n, *Galen in Byzantium*, [in:] *Material Culture and Well-Being in Byzantium (400–1453). Proceedings of the International Conference (Cambridge,*

emphasised, however, that these medical doctors, when elaborating on the dietetic properties of milk[20], did not confine themselves exclusively

8–10 September 2001), eds. M. Grünbart, E. Kislinger, A. Muthesius, D.Ch. Stathakopoulos, Wien 2007, p. 171–176; G. Cosmacini, M. Menghi, *Galeno e il galenismo. Scienza e idee della salute*, Milano 2012, p. 98–107; P. Bouras-Vallianatos, *Galen's Reception in Byzantium: Symeon Seth and his Refutation of Gallenic Theories on Human Physiology*, GRBS 55.2, 2015, p. 431–469; E. Gowling, *Aëtius' Extraction of Galenic Essence: A Comparison Between Book 1 of Aetius' Libri Medicinales and Galen's On Simple Medicines*, [in:] *Collecting Recipes. Byzantine and Jewish Pharmacology in Dialogue*, eds. L. Lehmhaus, M. Martelli, Boston–Berlin 2017, p. 83–101; P. Bouras-Vallianatos, *Reading Galen in Byzantium. The Fate of Therapeutics to Glaucon*, [in:] *Greek Medical Literature and its Readers: From Hippocrates to Islam and Byzantium*, eds. P. Bouras-Vallianatos, S. Xenophontos, London–New York 2018, p. 180–299; idem, *Galen in Byzantine Medical Literature*, [in:] *Brill's Companion to the Reception of Galen*, eds. P. Bouras-Vallianatos, B. Zipser, Leiden–Boston 2019, p. 86–110; P. Degni, *Textual Transmission of Galen in Byzantium*, [in:] *Brill's Companion...*, p. 124–139.

[20] Milk in the late antique and in the Byzantine period – A.N.J. Louvaris, *Fast and Abstinence in Byzantium*, [in:] *Feast, Fast or Famine. Food and Drink in Byzantium*, eds. W. Mayer, S. Trzcionka, Brisbane 2005, p. 197; Ch. Bourbou, M.P. Richards, *The Middle Byzantine Menu: Palaeodietary Information from Isotopic Analysis of Humans and Fauna from Kastella, Crete*, IJOa 17, 2007, p. 65–67; M. Grünbart, *Store in a Cool and Dry Place: Perishable Goods and their Preservation in Byzantium*, [in:] *Eat, Drink and Be Merry (Luke 12:19). Food and Wine in Byzantium. In Honour of Professor A.A.M. Bryer*, eds. L. Brubaker, K. Linardou, Aldershot 2007, p. 48; I. Anagnostakis, T. Papamastorakis, *Agraulountes kai amelgontes*, [in:] *Ē istoria tou ellēnikou galaktos kai tōn proiontōn tou I΄ triēmero ergasias Ksanthē, 7–9 Oktōbriou 2005*, Athena 2008, p. 211–237; C. Angelidi, I. Anagnostakis, *Ē byzantinē theōrēsē tou kyklou tou galaktos (100s–120s aiōnas)*, [in:] *Ē istoria...*, p. 199–208; J. Koder, *Stew and Salted Meat – Opulent Normality in the Diet of Every Day?*, [in:] *Eat, Drink and Be Merry...*, p. 70; A. Dalby, *Tastes of Byzantium. The Cuisine of a Legendary Empire*, London–New York 2010, p. 72, 79; Ch. Bourbou, *Fasting or Feasting? Consumption of Meat, Dairy Products and Fish in Byzantine Greece. Evidence from Chemical Analysis*, [in:] *Zōa kai periballon sto Byzantio (7os–12os ai.)*, eds. I. Anagnostakis, T.G. Kolias, E. Papadopoulou, Athena 2011, p. 100; Ch. Bourbou, B.T. Fuller, S.J. Garvie-Lok, M.P. Richards, *Reconstructing the Diets of Greek Byzantine Populations (6th–15th Centuries A.D.) Using Carbon and Nitrogen Stable Isotope Ratios*, AJPA 146, 2011, p. 571, 575–576, 578; M. Kokoszko, *Rola nabiału w diecie późnego antyku i wczesnego Bizancjum (IV–VII w.)*, ZW 16, 2011, p. 9–15; idem, *Smaki Konstantynopola*, [in:] *Konstantynopol – Nowy Rzym. Miasto i ludzie w okresie wczesnobizantyńskim*, eds. M.J. Leszka, T. Wolińska, Warszawa 2011, p. 560–562; I. Anagnostakis, *Byzantine Aphrodisiacs*, [in:] *Flavours and*

to quoting Galen's output but also referred to the teachings of other scholars, with a particular focus on the output of Rufus of Ephesus. At the same time, they never ventured outside the canon developed in antiquity in their accounts. An illustrative example of such are the works by Oribasius, who provides an abbreviated extract from the analysed passage of Galen's treatise[21] (along with Rufus' writings[22]), also noting the most crucial features of milk and whey within the catalogues classifying foodstuffs by their dominant properties[23].

Delights. Tastes and Pleasures of Ancient and Byzantine Cuisine, ed. I. A n a g n o s t a k i s, Athens 2013, p. 78–79; i d e m, *"The Raw and the Cooked": Ways of Cooking and Serving Food in Byzantium*, [in:] *Flavours and Delights...*, p. 175; Ch. B o u r b o u, *All in the Cooking Pot. Advances in the Study of Byzantine Diet*, [in:] *Flavours and Delights...*, p. 67; J. K o d e r, *Everyday Food in the Middle Byzantine Period*, [in:] *Flavours and Delights...*, p. 145; i d e m, *Natural Environment and Climate, Diet, Food, and Drink*, [in:] *Heaven & Earth. Art of Byzantium from Greek Collections*, eds. A. D r a n d a k i, D. P a p a n i k o l a-B a k i r t z i, A. T o u r t a, Athens 2013, p. 215; i d e m, *Cuisine and Dining in Byzantium*, [in:] *Byzantine Culture. Papers from the Conference "Byzantine Days of Istanbul" Held on the Occasion of Istanbul Being European Cultural Capital 2010. Istanbul, May 21–23 2010*, ed. D. S a k e l, Ankara 2014, p. 428–429, 433; Ch. B o u r b o u, S. G a r v i e-L o k, *Bread, Oil, Wine and Milk: Feeding Infants and Adults in Byzantine Greece*, [in:] *Archaeodiet in the Greek World. Dietary Reconstruction from Stable Isotope Analysis*, eds. A. P a p a t h a n a s i o u, M.P. R i c h a r d s, S.C. F o x, Princeton 2015, p. 174–177, 188; M. L e o n t s i n i, G. M e r i a n o s, *From Culinary to Alchemical Recipes. Various Uses of Milk and Cheese in Byzantium*, [in:] *Latte e latticini. Aspetti della produzione e del consume nella società miditerranee dell'Antichità e del Medioevo. Atti del Convegno Internazionale di Studio promosso dall'IBAM – CNR e dall'IRS – FNER nell'ambito del Progetto MenSALe Atene, 2–3 Ottobre 2015*, eds. I. A n a g n o s t a k i s, A. P e l l e t t i e r i, Lagonegro 2016, p. 205–222; Z. R z e ź n i c k a, *Milk and Dairy Products in Ancient Dietetics and Cuisine According to Galen's De alimentorum facultatibus and Selected Early Byzantine Medical Treatises*, [in:] *Latte e latticini...*, p. 50–55, 59–60, 64–68.

[21] O r i b a s i u s, *Collectiones medicae*, II, 59, 1, 1 – 14, 5.

[22] O r i b a s i u s, *Collectiones medicae*, II, 61, 1, 1 – 10, 2. Analogical data in an abbreviated form – O r i b a s i u s, *Synopsis*, IV, 40, 1, 1 – 6, 3.

[23] Fresh milk obtained from healthy animals as a foodstuff generating good juices – O r i b a s i u s, *Collectiones medicae*, III, 15, 1, 1 – 22, 3 (milk – III, 15, 1, 1 – 2, 1); O r i b a s i u s, *Synopsis*, IV, 14, 1, 1 – 21, 3 (milk – IV, 14, 1, 1–2); O r i b a s i u s, *Libri ad Eunapium*, I, 32, 1, 1 – 15, 3 (milk – I, 32, 1, 1–2); milk as a nutritious foodstuff (thicker milk provides more nutrition than thin milk) – O r i b a s i u s, *Collectiones medicae*, III, 13, 1, 1 – 13, 2 (milk – III, 13, 4, 1 – 5, 1); O r i b a s i u s, *Synopsis*, IV, 12, 1, 1 – 15, 2 (milk

In order to conclude the dietetic part of our analysis it should be stated that beliefs and opinions regarding the dietetic properties of milk underwent no dramatic change after the time Oribasius compiled

– IV, 12, 5, 1 – 6, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 29, 1, 1 – 15, 2 (milk – I, 29, 5, 1 – 6, 1); milk (mainly boiled) as a foodstuff generating thick juices – O r i b a s i u s, *Collectiones medicae*, III, 3, 1, 1 – 7, 3 (milk – III, 3, 6, 4); O r i b a s i u s, *Synopsis*, IV, 2, 1, 1 – 5, 3 (milk – IV, 2, 4, 5); O r i b a s i u s, *Libri ad Eunapium*, I, 19, 1, 1 – 5, 4 (milk – I, 19, 4, 5); fresh milk as a foodstuff harmful to the stomach (if the stomach is not warmed up enough, the milk inside may turn sour, and if the organ is too hot, during the process of ripening and initial digestion of milk, there is a risk of accumulation of "fatty" gases, which the physician compares to the smoke emitted when offerings are burnt) and to feverish patients – O r i b a s i u s, *Collectiones medicae*, III, 20, 1, 1 – 10, 2 (milk – III, 20, 5, 1 – 7, 1); O r i b a s i u s, *Synopsis*, IV, 19, 1, 1 – 10, 2 (milk – IV, 19, 5, 1 – 7, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 37, 1, 1 – 8, 2 (milk – I, 37, 4, 1 – 6, 1); milk as a foodstuff causing bloating – O r i b a s i u s, *Collectiones medicae*, III, 23, 1, 1 – 9, 4 (milk – III, 23, 7, 1); O r i b a s i u s, *Synopsis*, IV, 22, 1, 1 – 10, 1 (milk – IV, 22, 7, 1 – 8, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 39, 1, 1 – 7, 1 (milk – I, 39, 4, 1 – 5, 1); milk as a foodstuff causing headaches – O r i b a s i u s, *Collectiones medicae*, III, 21, 1, 1 – 6, 2 (milk – III, 21, 5, 1–2); O r i b a s i u s, *Synopsis*, IV, 20, 1, 1 – 4, 2 (milk – IV, 20, 3, 1); milk as a foodstuff contributing to the formation of kidney stones and blockages of the liver – O r i b a s i u s, *Collectiones medicae*, III, 25, 1, 1 – 8, 2 (milk – III, 25, 1, 1–5); O r i b a s i u s, *Synopsis*, IV, 24, 1, 1 – 8, 2 (milk – IV, 24, 1, 1 – 2, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 41, 1, 1 – 7, 2 (milk – I, 41, 1, 1 – 2, 1); milk as a foodstuff that slows down stomach activity (such properties are, in particular, attributed to milk with boiled–out whey) – O r i b a s i u s, *Collectiones medicae*, III, 30, 1, 1 – 9, 3 (milk – III, 30, 4, 1–2); O r i b a s i u s, *Synopsis*, IV, 30, 1, 1 – 13, 3 (milk – IV, 30, 5, 1); milk with a higher content of whey as a laxative foodstuff; whey as a laxative substance whose effect may be additionally strengthened by adding honey and salt to the milk – O r i b a s i u s, *Collectiones medicae*, III, 29, 1, 1 – 22, 2 (milk and whey – III, 29, 8, 1 – 10, 1); O r i b a s i u s, *Synopsis*, IV, 28, 1, 1 – 27, 2 (milk and whey – IV, 28, 9, 1 – 12, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 45, 1, 1 – 17, 1 (milk and whey – I, 45, 8, 1 – 10, 1); whey as an agent diluting thick juices, removing blockages and undigested material – O r i b a s i u s, *Collectiones medicae*, III, 24, 1, 1 – 16, 7 (whey – III, 24, 7, 1 – 8, 1); O r i b a s i u s, *Synopsis*, IV, 23, 1, 1 – 16, 7 (whey – IV, 23, 7, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 40, 1, 1 – 14, 7 (whey – I, 40, 6, 1 – 7, 1); whey as an agent diluting thick juices – O r i b a s i u s, *Collectiones medicae*, III, 2, 1, 1 – 26, 2 (whey – III, 2, 26, 1); O r i b a s i u s, *Synopsis*, IV, 1, 1, 1 – 22, 3 (whey – IV, 1, 22, 1–2); whey as a purgative substance – O r i b a s i u s, *Collectiones medicae*, XIV, 48, 1, 1–42 (whey – XIV, 48, 1, 4); O r i b a s i u s, *Synopsis*, II, 34, 1, 1–19 (whey – II, 34, 1, 3); O r i b a s i u s, *Libri ad Eunapium*, II, 15, 1, 1–26 (whey – II, 15, 1, 4); whey as a substance characterised by a slight warming effect (in the first degree) – O r i b a s i u s, *Collectiones medicae*, XIV, 15, 1, 1–5 (whey – XIV, 15, 1, 5); O r i b a s i u s, *Synopsis*, II, 3, 1, 1–3 (whey – II, 3, 1, 3).

his treatise. Neither did medical recommendations on its processing in terms of its therapeutic applications. In the 6th c. AD, Aëtius of Amida remained faithful to the doctrine developed in antiquity, and thus, in his treatise, he incorporated information derived from Rufus of Ephesus and Galen[24]. What is more (probably with the help of Oribasius' writings), he arranged and catalogued the most crucial data on the influence of milk upon the human body[25]. Professionally active in the same century as Aëtius of Amida, Anthimus also did not register any observations surpassing the level of knowledge available since antiquity[26]. Nor did the subsequent century bring any new findings, which can easily be concluded from an analysis of the medical encyclopaedia compiled by Paul of Aegina[27]. Last but not least, further evidence of the centuries-old persistence of the doctrine is the anonymous work entitled *De cibis*[28].

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[24] Aëtius of Amida, II, 86, 1–8; II, 87, 1–15; II, 89, 1–5; II, 90, 1–8; II, 93, 1–20; II, 94, 1–21.

[25] Aëtius of Amida, II, 241, 1–21 (milk – II, 241, 13) – boiled milk as a foodstuff generating thick juices; II, 250, 1–21 (milk – II, 250, 9–10) – milk as a nutritious foodstuff; II, 252, 1–24 (milk – II, 252, 1–3) – milk as a foodstuff generating good juices; II, 257, 1–11 (milk – II, 257, 4–6) – milk as a foodstuff harmful to the stomach; II, 259, 1–9 (milk – II, 259, 6–7) – milk as a foodstuff causing bloating; II, 261, 1–14 (milk – II, 261, 1–4) – milk as a foodstuff contributing to the formation of kidney stones and leading to liver blockages and enlargement of the spleen; II, 265, 1–39 (milk and whey – II, 265, 17–21) – milk with a higher content of whey as a laxative foodstuff; whey as a laxative substance, whose effect may be additionally strengthened by adding honey and salt to the milk; II, 271, 1–8 (milk – II, 271, 6–7) milk as a foodstuff causing headaches; II, 199, 1–3 (whey – II, 199, 3) – whey as a substance characterised by a moderate warming effect (first degree); II, 225, 1–20 (whey – II, 225, 6) – whey as a purgative substance; II, 260, 1–26 (whey – II, 260, 8–9) – whey as an agent diluting thick juices, removing blockages and undigested material.

[26] Anthimus, 76. Milk and its derivatives as a group of foodstuffs discussed by Anthimus, cf. I. Mazzini, *L'alimentation et la médecine dans le monde antique*, [in:] *Histoire de l'alimentation*, eds. J.L. Flandrin, M. Montanari, Paris 1996, p. 262.

[27] Paul of Aegina, I, 3, 1, 1–9; I, 87, 1, 1–21.

[28] *De cibis*, V, 1–58 (milk – V, 2–12) – milk as a foodstuff generating good juices; IX, 1–14 (milk – IX, 5–8) – milk as a foodstuff harmful to the stomach; XI, 1–12 (milk – XI, 2–4) – milk as a foodstuff leading to blockages of internal organs; XIII, 1–15 (milk – XIII, 6–7) – milk with a lowered whey content (*tyrógala*) as a foodstuff slowing down stomach

Zofia Rzeźnicka

2. Galen and later medical authors on the pharmacological properties of milk and its applications in therapeutics

Pharmacological characteristics of milk noted by ancient and Byzantine doctors, together with the examples demonstrating their application in therapeutic procedures, constitute an equally important pool of data of galactology. The greatest amount of detailed information can be found in Galen's writings, abbreviated extracts of which are quoted by Byzantine physicians. Therefore, in order to avoid repetitions, the discussion presented below will focus on the material provided by Galen, while Byzantine source texts will be utilised to exemplify the continual use of the ancient theory on milk in therapeutics. As for these later sources, from the cornucopia of information available, I will narrow down my discourse only to select examples, and present pieces of advice which concern cures prescribed for gastrointestinal disorders.

Galen provided his most comprehensive description of the therapeutic properties of milk in *De simplicium medicamentorum temperamentis ac facultatibus*[29]. Even if – as suggested by the title itself – the main stress of the treatise is put on those features of milk which allow it to cure certain conditions, the galactology preserved therein is a perfect illustration of the mutual complementation of the dietetic theory (and

activity; XIX, 1–7 (milk – XIX, 3) – milk (esp. cold) as a foodstuff generating raw juices; XX, 1–14 (milk – XX, 8) – boiled-out milk as a foodstuff generating sour juices.

[29] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 263, 12 – 266, 6, vol. XII. Milk in ancient therapeutics – H. K i n g, *Hippocrates' Woman. Reading the Female Body in Ancient Greece*, London–New York 1998, p. 41, 71, 122; J. W i l k i n s, *Galien et le lait*, FH 13.1–3, 2015, p. 273–281; M. K o k o s z k o, *Galaktologia terapeutyczna (γαλακτολογία ἰατρική) Galena zawarta w De simplicium medicamentorum temperamentis ac facultatibus*, PNH 14.2, 2015, p. 5–14, 18–20; i d e m, *Galen's Therapeutic Galactology (γαλακτολογία ἰατρική) in De simplicium medicamentorum temperamentis ac facultatibus*, [in:] *Latte e latticini...*, p. 36–40, 44–45; M. K o k o s z k o, J. D y b a ł a, *Milk in Medical Theory Extant in Celsus' De medicina*, JFSE 6.5, 2016, p. 267–279; M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, J. D y b a ł a, *Pedanius Dioscorides' Remarks on Milk Properties, Quality and Processing Technology*, JAS.R 19, 2018, p. 982–986.

even culinary practice) of the time with that of pharmacology. Galen's holistic approach is epitomised by the fact that, at the very beginning of his teachings, the author indicates that milk could be used both as a foodstuff and a medicament[30]. He adds that, in order to have an appropriate curative effect, milk should be free of any impurities, which meant that it could neither taste bitter, sharp nor salty, nor emit an unpleasant odour. Its taste ought to be agreeable, have a delicate sweetness and a mild aroma[31].

Next, Galen lists the various types of milk used for therapeutic purposes. He commences his elaborations with breast milk, which – as he emphasises – should be obtained from healthy women who follow an appropriately balanced diet. If breast milk is unavailable, he recommends using one whose nature is closest to the characteristics of the human body, i.e., obtained from animals whose meat is not unpleasant in taste or smell[32]. According to Galen, this criterion is not fulfilled by the milk of dogs, panthers, hyenas, or bears. On the other hand, he advocates the milk of pigs, goats, mares, cows, donkeys and sheep as being appropriate. As for donkey milk, it appears to be too watery as it contains excessive amounts of whey. As for the rest, Galen resorts to dietetic vocabulary, calling the milk of cows the thickest, goats noticeably thinner, and of pigs, watery and stodgy[33]. In the final part of the analysed extract, he adduces the information which has already been partially quoted within the dietetic description of milk. Thus, he writes that each type of milk

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[30] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 263, 12–14, vol. XII.

[31] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 264, 1–6, vol. XII.

[32] The same recommendation is to be found in *De alimentorum facultatibus*, in the section devoted to animal foodstuffs, where we can read that man should, above all, consume pork, since it is – by nature – the closest to the characteristics of the human body – G a l e n, *De alimentorum facultatibus*, 663, 4–8, vol. VI. On the same topic, cf. Z. R z e ź n i c k a, *Rola mięsa w diecie w okresie pomiędzy II a VII w. w świetle źródeł medycznych*, [in:] *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część II, *Pokarm dla ciała i ducha*, ed. M. K o k o s z k o, Łódź 2014, p. 231.

[33] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 265, 6 – 266, 2, vol. XII.

consists of milk curd, whey and fat, adding that the last is used for the production of butter (*boútyron*). Butter is, however, characterised only in therapeutic terms, and its actions are defined as facilitating the local concoction of juices and as producing local relaxation, which is why it can be administered, for example, to patients with disorders of the parotids and lymphatic glands[34].

Other specific examples of the medical applications of milk itself and its constituents are included in the chapter devoted to whey[35]. With regard to whey, Galen attributes it with purgative effects[36]. When drunk, it plays the role of a laxative agent, and when applied as an enema, it gently purges the viscera, eliminating noxious humours. As a cleansing agent, whey could also be applied externally, for instance, to bathe ulcerations (in which dangerous juices accumulated), or to wash away other pharmaceutical agents, among which Galen mentions a diaphoretic medicine used to treat extravasations and dermatological changes (that result in a darkening of the skin). Finally, for its purgative effect, whey was an ingredient of medicaments administered to treat dark circles under the eyes and subcutaneous haematomas[37].

When it comes to milk curd, it was also attributed with an ability to abate harmful juices. Additionally, it gained siccative properties if it was obtained from milk in which hot stones had been immersed, and thus, it could effectively treat dysentery and ailments caused by an influx of humours to the stomach. Finally, it was stated that curd possesses some adhesive properties[38]. Galen gives us a clue to the progress made in the culinary technology used to process milk into curd, which, in fact, also

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[34] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 266, 2–6, vol. XII. On the subject of butter cf. the part of the present book devoted to the foodstuff.

[35] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 266, 7 – 269, 15, vol. XII.

[36] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 266, 7–8, vol. XII.

[37] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 266, 8–16, vol. XII.

[38] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 266, 16 – 267, 2, vol. XII.

alludes to another characteristic of curd. Thus, we learn that although, similarly to the method employed in the time of Dioscorides, milk was boiled up by placing hot stones (*káchlekes*)[39] in it, in the 2nd c. AD there was an alternative technology (by the bye, developed by Galen himself) which involved substituting stones with iron cylinders. The physician emphasises that the resultant curd offers an improved therapeutic value, since it develops (on top of siccative) styptic properties due to the application of iron[40].

Galen's analysed treatise also includes a long catalogue of conditions treated by means of milk. We learn, for example, that it can be used to wash body parts irritated by the influx of noxious juices. He also adds that due to its adhesive properties (which is conditioned by its content of fat[41]), milk can adhere and ultimately form a film covering exposed tissue, protecting it against the influence of harmful factors. Moreover, Galen indicates that, due to the fact that the properties of milk change so quickly, they are most clearly effective when it is fresh and still warm[42]. Milk was commonly used in ophthalmology[43], for instance, by apply-

[39] On the practice of cooking with hot stones, cf. P. T o m k i n s, *Communality and Competition: The Social Life of Food and Containers at Aceramic and Early Neolithic Knossos, Crete*, [in:] *Cooking Up the Past: Food and Culinary Practices in the Neolithic and Bronze Age Aegean*, eds. C. M e e, J. R e n a r d, Oxford 2007, p. 184. On boiling milk, cf. a section of the chapter devoted to the culinary usage of this beverage.

[40] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 267, 2 – 267, 13, vol. XII. The physician made sure that the tool he applied was easy and safe to use. What can be concluded from his narrative is that a metal rod ran through the middle of the cylinders (with a grip thermally isolated by a piece of cloth), which allowed the user to grab and conveniently heat them over an open fire until they had reached a suitably high temperature.

[41] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 264, 8–16, vol. XII. The author also states that thanks to its whey content, milk also has some laxative properties which enable dangerous substances to be flushed out of the body effectively. Therefore, in this type of therapy, he recommends the application of milk rather than water.

[42] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 264, 16 – 265, 5, vol. XII.

[43] According to the physician, fresh breast milk is most advisable in eye ailments and diseases, cf. G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 268, 1–2, vol. XII.

ing it (independently or as an ingredient of the medication known as *kollýrion*) to treat ailments related to the influx of irritants to the eyes. What is more, it also removed lividities and dark circles under the eyes and was administered as part of a medicament used to treat the malady identified as *ofthalmía*, in which case Galen recommended applying milk, together with rose oil and egg white, to the outer surfaces of the eyelids, just before going to bed. The physician maintains that this pharmaceutical facilitated the concoction (leading to the transformation) of harmful humours, and thus, effectively alleviated eye inflammations[44]. Due to its non-invasiveness, milk was also administered during treatments of other body parts which required the application of mild medicines. Therefore, it could be injected (alone or in conjunction with other soothing agents) inside an ulcerated uterus or applied to treat ailments of the rectal area such as inflammations and painful folds of the *rectum*[45]. For the same reason, the said liquid was also used to treat genital disorders and other body parts of a delicate tissue structure. Thus, milk was utilised to address inflammations, erosions, or any types of malignant changes, while chancroid ulcerations were treated with a mixture of milk and painkillers, and mostly with ointments based on zinc oxide[46]. Galen also mentions the practice of the oral application of milk in the form of mouthwashes, which he calls *diáklysma* or *diakrátema*. The physician adds that it alleviated inflammations within the oral cavity, tonsillitis and ailments whose symptoms resemble pharyngitis. In such cases, it was the soothing properties of milk that were of the greatest significance and could be intensified by partially boiling out the whey[47]. From his writings, just as from *De*

[44] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 267, 13 – 268, 2, vol. XII.

[45] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 268, 2–6, vol. XII.

[46] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 268, 6–11, vol. XII.

[47] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 268, 11–18, vol. XII.

materia medica by Dioscorides, we can also conclude that milk played an important role in the preparation of antidotes used to neutralise the effect of poisonous substances obtained from animals (for instance, poison of the sea slug, also called the sea hare [*Aplysia leporina*], or cantharidin, produced from an insect known as the Spanish fly[48], and plants (for instance, from the anthora [*Aconitum anthora* L.] or from the deadly carrot [*Thapsia garganica* Bauer])[49].

Last but not least, in order to underscore his own competence and independence of thought, the doctor reveals himself to be courageous enough to contradict the superstitions of his time (commonly accepted by other physicians), by focusing on the allegedly effective therapeutic procedures related to the use of dog's milk[50]. He firmly disagrees with the opinion that applying this substance to pilose eyelids upon the removal of hair prevents it from re-growing. Another myth that he cites is the belief that rubbing dog's milk into the genital area (prior to puberty) could block the growth of pubic hair[51]. His final example is the opinion that drinking dog's milk causes the natural evacuation of dead foetuses[52]. The physician repudiates decidedly the aforementioned beliefs, and at the same time, warns his readers against accepting them. In order to underline his competence once again, Galen also maintains that all the *exempla* of the therapeutic applications of milk that he provided had been proven in the course of his own professional practice[53].

An analysis of Byzantine medical sources confirms that the framework of knowledge presented above became the binding interpretation

[48] Cf. the passages containted in the present book devoted to Celsus and Dioscorides.

[49] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 268, 18 – 269, 4, vol. XII.

[50] The belief in the curative properties of dog's milk must have been quite deeply rooted though, since it survived until the times of early Byzantium. As we learn from Oribasius, it was believed to alleviate teething pain when rubbed into an infant's gums – O r i b a s i u s, *Libri ad Eunapium*, IV, 63, 1, 1 – 2, 3 (milk – IV, 63, 1, 1 – 2, 1).

[51] Cf. D i o s c o r i d e s, II, 70, 6, 9–10.

[52] Cf. D i o s c o r i d e s, II, 70, 6, 11–12.

[53] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 269, 4–15, vol. XII.

of medical competence for Oribasius[54], Aëtius of Amida[55], and Paul of Aegina[56], as was confirmed not only by the characteristics of the pharmacological properties of milk included in their works, but also by specific examples of its therapeutic applications. Each of the listed authors provides details on the curative use of milk when discussing treatments for nearly all the disorders and diseases highlighted by Galen. The continuum is clearly visible in the cures prescribed for gastrointestinal conditions.

Fragments of the extant medical writings composed up until the very end of the early Byzantine period prove that, long after Galen, milk (applied in various ways) constituted one of the basic substances effective in internal cleansing. As a foodstuff, it was considered to stimulate the gastrointestinal system to excrete noxious remainders after digestion. That is why, in the late 4th c. AD, Oribasius recommended its consumption to people suffering from elephantiasis, quoting the assertions made by Philoumenus of Alexandria (2nd c. AD)[57] in that matter. From the exhaustive chapter devoted to its treatment, we can conclude that the therapy was based on a series of cathartic procedures, administered in a strictly stipulated order, one of which was a course of milk treatment,

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[54] O r i b a s i u s, *Collectiones medicae*, XV, 2, 1, 1 – 4, 4; O r i b a s i u s, *Libri ad Eunapium*, II, 1, g, 1, 1 – 9, 1. Milk (and whey) in Byzantine therapeutics – M. C h r o n ē, *Therapeies astheneiōn me zōikēs proeleuseōs yles sta byzantina iatrika keimena. Symbolē stēn meletē tōn antilēpseōn gia tis astheneies kai tis therapeies tous sto Byzantio*, BSym 20, 2010, p. 149–154, 156–157, 164, 176; e a d e m, *Ta zōika proionta ōs prōte ylē gia tēn paraskeuē farmakōn kai periaptōn sta byzantina iatrika keimena tēs mesēs periodou. Ē exeliktikē schesē tēs panidas me tēn iatrikē kai tēn leukē mageia*, [in:] *Zōa...*, p. 391–392; e a d e m, *Ē panida stēn diatrofē kai stēn iatrikē sto Byzantio*, Athenai 2012, p. 202–206; Z. R z e ź n i c k a, *Mleko i przetwory mleczne w medycynie wczesnego Bizancjum na przykładzie pism Orybazjusza*, [in:] *Leki i choroby odzwierzęce*, eds. L. W d o w i a k, B. P ł o n k a-S y r o k a, A. S y r o k a, vol. I, Wrocław 2016, p. 54–58.

[55] The author combines the pharmaceutical characteristics of milk with a description of its dietetic properties – cf. A ë t i u s o f A m i d a, II, 92, 1–38; II, 97, 1–11.

[56] In his encyclopaedia, the author combines the pharmaceutical characteristics of milk with a description of its dietetic properties – P a u l o f A e g i n a, I, 4, 1, 1–21; VII, 3, 3, 2–11.

[57] On the physician, cf. J.-M. J a c q u e s, *Philoumenos of Alexandria (150 – 190 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists. The Greek Tradition and its Many Heirs*, eds. P.T. K e y s e r, G. I r b y-M a s s i e, London–New York 2008, p. 661–662.

preceded by a 10-day preparation period during which the patient was obliged to drink a specific amount of water and consume fish and poultry. This stage was followed by a prolonged purification of the patient's body which entailed drinking (preferably donkey) milk[58], which triggered the intestines to work intensively and – as expressed by the author – additionally contributed to the mixing of the bowel content within the digestive system – thereby neutralising its sharpness. At the beginning of the therapy, the patient was given between three and five measures (*kotýlai*) of milk curdled (*schíston* [*gála*]) by means of boiling it with calamint previously soaked in vinegar. In the following days, he was offered uncoagulated (warm or freshly obtained) milk. The physician recommended that this type of diet last for a fortnight, after which time the patient should start eating spicy foodstuffs in order to thin down the bowel content and dilute the thick juices. The doctor also adds that, if this diet did not bring the desired effects, it ought to be repeated two or three times[59].

Oribasius' appreciation of the ancient medical output is also visible in his reference to the purging methods noted by Rufus of Ephesus in the 2nd c. AD[60]. In this case, the consumption of milk mixed with honey or sweet wine was recommended a day after the application of cathartic procedures administered by means of enemas. From the analysed extract, it can be concluded that due to the aforementioned additives, milk would acquire the ability to remove the remains of liquid elements lingering within the patient's gastrointestinal system, which was one of the stages closing the process of purification. From the further narrative,

[58] However, if it was unavailable, the author suggests using goat milk, and adds that the animals to be milked should be fed calamint.

[59] Oribasius, *Collectiones medicae*, XLV, 29, 1, 1 – 79, 4 (the described procedure – XLV, 29, 8, 1 – 14, 1; a procedure with the application of milk – XLV, 29, 8, 4 – 13, 2). Similar recommendations – Paul of Aegina, IV, 1, 1, 1 – 8, 6 (purgative procedure – IV, 1, 2, 13–19; whey – IV, 1, 2, 14; coagulated milk – IV, 1, 2, 14–15; non-coagulated and freshly obtained milk – IV, 1, 2, 16). Moreover, in the later part of the passage (XLV, 29, 52, 1–5; milk – XLV, 29, 52, 5), milk is recommended (in the convalescence period) as one of the non–spicy foodstuffs which also possess the ability to neutralise spiciness. Serving milk to patients with elephantiasis was also recommended by Paul of Aegina, IV, 1, 4, 1 – 5, 1 (milk – IV, 1, 4, 21).

[60] Oribasius, *Collectiones medicae*, VII, 26, 1, 1 – 201, 3.

we also learn that upon termination of the therapy, the patient was advised to go for walks, and have massages and baths, as well as to consume foodstuffs which facilitated recovery[61]. One should note that patients were also purged by means of milk in the 6th c. AD. This is known because of the fact that Aëtius of Amida quotes topical doctrines from Galen *verbatim* – for instance, in his disquisitions on people suffering from a four-day fever. This passage leads to the conclusion that, over three centuries after the doctor of Pergamum, medical practitioners would still administer the fresh milk of donkeys, mares, or goats in such cases, resorting to goat milk most frequently (due to its greater availability), though still faithful to Galen's teachings that the first two seemed to be most effective[62].

Reduced milk, in turn, was still credited with the ability to slow down the reactions of the digestive system. That is why, in the 4th c. AD, it was recommended in the case of dysentery. Comprehensive descriptions of such a treatment (including detailed information on the application of milk and the accompanying procedures) can be found in writings by Oribasius, who notes the application of appropriate cataplasms and a five-day procedure that exclusively entailed drinking goat milk mixed with honey. The therapy also involved the practice of giving patients boiled out (firstly, to half of its initial capacity, and then to one third) milk (probably also goat) – this time without honey, but with the addition of other foodstuffs, such as bread soaked in water or *póltos* boiled in milk[63]. While providing a description of another cure for dysentery (also prescribed in the case of an influx of noxious humours into the stomach), the medical author advised the patient to eat curd precipitated by boiling[64]. Interestingly, excerpts from Oribasius prove that the treatment of dysentery also involved fresh milk. It was an ingredient of

[61] Oribasius, *Collectiones medicae*, VII, 26, 170, 4 – 172, 3 (milk – VII, 26, 171, 2).

[62] Aëtius of Amida, V, 84, 1–121 (quoted extract – V, 84, 93–97); the dosage of milk as a medicament in the discussed case – V, 84, 97–103.

[63] Oribasius, *Eclogae medicamentorum*, 54, 1, 1 – 22, 6 (analysed extract – 54, 2, 2 – 3, 3; milk – 54, 2, 3; 54, 2, 4; 54, 3, 1).

[64] Oribasius, *Libri ad Eunapium*, IV, 87, 1, 1 – 11, 3 (analysed extract – IV, 87, 2, 1–4; milk – IV, 87, 2, 1–2; IV, 87, 3, 1).

enemas used to alleviate the early stages of irritation within the digestive system. According to the physician's recommendations, such milk-based clysters[65] (sometimes enriched with the addition of starch), should additionally contain a decoction made from myrtle or roses, the husk of a pomegranate, lentil seeds or the flower of a wild pomegranate[66]. As for purging methods by mean of clysters with milk, such were commonly prescribed for various ailments, from the aforementioned disorders of the digestive system, through the treatments of irritations and inflammations of internal organs, to the detoxification of the body. We are able to make such an inference owing to the exhaustive list of diseases, requiring such procedures, quoted by Oribasius[67] (borrowed from Rufus of Ephesus). As for details, milk was admixed to so-called soothing enemas[68]. Such medicines were recommended to patients suffering from bowel irritations which were not caused by an influx of harmful humours. They consisted of the milk of goats or cows mixed with buckthorn, Samian earth, or starch[69]. Milk was also injected via the rectum in the case of ulcerations and inflammations of the intestines, kidneys, bladder, and uterus[70]; or as an antidote to counteract the poisonous effects of black henbane[71].

[65] Or other liquids, e.g., gruel made from wheat, spelt groats, *ptisáne*, a decoction made from rice with the addition of goat or goatling fat.

[66] O r i b a s i u s, *Eclogae medicamentorum*, 54, 16, 1 – 17, 1 (milk – 54, 16, 3).

[67] For instance O r i b a s i u s, *Collectiones medicae*, VIII, 24, 1, 1 – 63, 4; O r i b a s i u s, *Synopsis*, I, 19, 1, 1 – 18, 5.

[68] O r i b a s i u s, *Collectiones medicae*, VIII, 24, 1, 2.

[69] O r i b a s i u s, *Collectiones medicae*, VIII, 24, 54, 1–2 (milk – VIII, 24, 54, 1); O r i b a s i u s, *Synopsis*, I, 19, 18, 1–3 (milk – I, 19, 18, 2).

[70] O r i b a s i u s, *Collectiones medicae*, VIII, 24, 18, 1–2 (milk – VIII, 24, 18, 1); O r i b a s i u s, *Synopsis*, I, 19, 8, 1–3 (milk – I, 19, 8, 1). Aëtius of Amida also mentions a milk enema applied in the treatment of irritations and inflammations of the intestines, kidneys, bladder and uterus – A ë t i u s o f A m i d a, III, 159, 1–99 (milk – III, 159, 54). What is more, as seen from the analysed chapter within *Collectiones medicae*, milk was also used internally (as a wash or an enema), in order to neutralise sharp juices that caused itchiness, tuberculoid leprosy, and surface ulcers – O r i b a s i u s, *Collectiones medicae*, VIII, 24, 18, 2 – 19, 1.

[71] In such a case, an enema made from cow or goat milk should be applied (or a poultry decoction should be used) – O r i b a s i u s, *Collectiones medicae*, VIII, 24, 24, 1–2 (milk – VIII, 24, 24, 1).

Though the writings of Byzantine physicians reveal little on the therapeutic use of curd, they do devote some attention to the application of whey itself. What we learn from the work penned by Aëtius of Amida (who refers to the authority of Herodotus [2nd/1st c. BC][72]) is that, in the 6th c. AD, whey was still treated as a substance that helped to dispose of harmful juices, including black bile. Thus, Aëtius of Amida describes a therapy for people suffering from sialorrhoea, whom he advises, among other things, to drink milk. However, he also states that those who require purification of the stomach should drink whey obtained through adding *oksýmeli* to milk. He also remarks that whey must be taken in small doses at regular intervals, and the first dose should be served with the addition of lesser dodder or bindweed[73]. In a passage on treating melancholy (this time written on the basis of Galen's output[74]), Aëtius of Amida recommends serving whey to the patient in order to stimulate their digestive system. At the same time, he forewarns the reader that it must not be a by-product of the cheesemaking procedure, but it should be obtained in the process of boiling the milk of mares or cows. To obtain such a substance, the author recommended using a new bowl to boil the milk, which should be stirred frequently with a fig branch. Next, he advised the reader to sprinkle the drink with a little *oksýmeli*, and – once the whey is extracted – to strain it, mix it with honey and

[72] On the physician: M. W e l l m a n n, *Herodotos (12)*, [in:] *RE*, vol. VIII, Stuttgart 1913, cols. 990–991; A. T o u w a i d e, *Hērodotos (Pneum., of Tarsos?) (70 – 100 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 383–384.

[73] A ë t i u s o f A m i d a, IX, 2, 1–116 (quoted extract – IX, 2, 92–101; milk – IX, 2, 94; whey – IX, 2, 96–97; IX, 2, 99). In the further sections of the text, we can read that an effective therapy for a painful irritation of the stomach (most likely triggered by black bile) is to consume fresh donkey milk. The author adds that if it is unavailable, one should drink cow milk, and if the beverage is not fresh, one should heat it up, adding one quarter of water, cf. A ë t i u s o f A m i d a, IX, 2, 105–108 (milk – IX, 2, 105).

[74] In his lecture, Galen refers to the works by Poseidonius (1st c. BC), Rufus of Ephesus, Archigenes of Apamea (1st/2nd c. AD), Iustus (1st c. BC/1st c. AD), and Themison. On Poseidonius, cf. P.T. K e y s e r, *Poseidōnios (Med. I) (70 – 30 BCE?)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 690–691. On Iustus, cf. J. S c a r b o r o u g h, *Iustus the Pharmacologist (30 BCE – ca 150 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 458–459. On Archigenes of Apamea, cf. A. T o u w a i d e, *Arkhigenēs of Apameia (95 – 115 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 160–161.

serve it for drinking, with a recommended dose of up to five mugs[75]. From Byzantine medical treatises we learn about yet another variation of melancholy, i.e., a mental disorder called lycanthrophy[76]. The suggested treatment involved a series of procedures such as blood-letting (which continued until the patient lost consciousness), a diet rich in foodstuffs characterised by good juices, and baths in fresh water. Besides these, the patient's body was also purified internally by serving them whey, and applying a drug made from colocynth, a viper antidote, and other substances used in the therapy aimed at the removal of black bile[77].

It is also worth adding that Byzantine physicians accepted drinking pure whey as part of the diet followed by relatively healthy people, i.e., those who did not suffer from any chronic diseases. This recommendation concerned, for instance, people with *kakochymía* (caused by the accumulation of undigested material), whose symptoms included skin efflorescence and painful urination and defaecation. According to Oribasius, such people should drink milk with honey, and also consume whey obtained by adding small amounts of wine or *melíkraton* to the boiling milk. When discussing the details of serving whey, Oribasius recommends taking the first dose with a pinch of salt, arguing that in this form, whey easily passes through the gastrointestinal tract (leading to purgation). Next, the patient is obliged to drink (gradually and in small amounts) whey in its pure form until their digestive system has been appropriately cleansed[78].

[75] Aëtius of Amida, VI, 10, 1–138 (quoted extract – VI, 10, 36–43; milk – VI, 10, 36; VI, 10, 39; whey – VI, 10, 37).

[76] On the subject, cf. N. Metzger, *Zwischen Mensch und Wolf. Zur Lykanthropie in der spätantiken Medizin*, EC 80, 2012, p. 135–156.

[77] Oribasius, *Synopsis*, VIII, 9, 1, 1 – 5, 3 (quoted extract – VIII, 9, 3, 1 – 4, 5; whey – VIII, 9, 4, 2); Aëtius of Amida, VI, 11, 1–21 (analysed extract – VI, 11, 10–18; whey – VI, 11, 14); Paul of Aegina, III, 16, 1, 1–16 (analysed extract – III, 16, 1, 6–14; whey – III, 16, 1, 11). Melancholy as one of disorders associated with black bile has been recently discussed by Keith Andrew Steward (*Galen's Theory of Black Bile: Hippocratic Tradition, Manipulation, Innovation*, Leiden–Boston 2019, p. 129–136). Another type of melancholy illness was cynanthropy, cf. N. Metzger, *Kynanthropy: Canine Madness in Byzantine Late Antiquity*, HPs 26.3, 2015, p. 318–331.

[78] Oribasius, *Libri ad Eunapium*, I, 9, 1, 1 – 20, 2 (quoted extract – I, 9, 9, 1 – 12, 1; purgative procedure with whey – I, 9, 9, 4 – 12, 1). Similar recommendations – Paul of Aegina, I, 43, 1, 1–22 (whey – I, 43, 1, 16–17).

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3. Milk in cuisine

The analysed medical source texts provide a great deal of valuable data on the culinary aspect of milk[79]. We have already learned from Galen that its quality was assessed in terms of freshness and thickness. As for the first, this should come as no surprise given the hot Mediterranean climate, which made milk rapidly go sour. Accordingly, healthy and fresh milk was a product available easier in the country than in urban areas. As far as thickness is concerned, we have been taught by Dioscorides and Galen that it was conditioned by the season and the kind of fodder animals would eat. From other source material we can conclude that key factors warranting the production of a good milk were also the state of health[80] and the age[81] of the milked animal. Such remarks may suggest that it was preferable to purchase it directly from the farmer, and not from tradesmen, since only in the first case could the well-being of the milk animals be personally assessed[82].

[79] A short yet informative overview of milk in ancient cuisine, cf. C. C e r c h i a i M a n o d o r i S a g r e d o, *Fiori per prima l'età dell'oro... fiumi di latte scorrevano (Ov. Met., I, 89;111)*, [in:] *Latte e latticini...*, p. 30–31.

[80] O r i b a s i u s, *Collectiones medicae*, III, 15, 1, 1–2; O r i b a s i u s, *Synopsis*, IV, 14, 1, 1–2; O r i b a s i u s, *Libri ad Eunapium*, I, 32, 1, 1–2; A ë t i u s o f A m i d a, II, 88, 1–6; II, 252, 1–2; *De cibis*, V, 2–3.

[81] The best milk came from mature animals, while the milk obtained from younger and ageing specimens was characterised by noticeably poorer quality. The former contained excessive amounts of whey and was not particularly nutritious, while in the latter case, the whey content was too scarce (A ë t i u s o f A m i d a, II, 91, 1–3). The milk from mature animals as the best type of the foodstuff – O r i b a s i u s, *Collectiones medicae*, II, 59, 6, 1 – 7, 1.

[82] As has been already demonstrated, within the discussed source texts we can find hints on how to recognise high-quality milk (characterised by a pleasant smell [or lack of unpleasant odour], and a slightly sweet flavour). What proves the significance of the selection of the best milk is the fact that Oribasius and Aëtius of Amida devoted separate sections of their treatises to this issue (O r i b a s i u s, *Synopsis*, V, 3, 1, 1 – 2, 5; A ë t i u s o f A m i d a, IV, 5, 1–10). The matter was also discussed by the authors of agronomical works. For instance, in *Geoponica*, the reader is advised to immerse a sharp bulrush into the vessel with milk, then use it to place drops of the beverage on the fingernail and observe the speed at which the milk drips down its surface. If this happened quickly, the milk would be diluted with water, and if it took more time to linger on the nail, the

In order to delay the process of deterioration, milk was processed, i.e., boiled[83]. There must have been a number of methods of heating it up, and in the analysed texts, medical doctors often resorted to the practice which involved placing hot stones or metal discs inside the vessel filled with the liquid. There is no information that the method was not employed at home for the requirement of feeding family members either. This technology was already common in the 1st c. AD and was still preferred in early Byzantium[84]. In all likelihood, its popularity was related to the fact that it was much more effective (especially in terms of obtaining a high-quality product) than boiling milk over a hearth, since it prevented the liquid from burning and adhering to the rough surfaces of metal or (unglazed) ceramic pots[85]. In order to mitigate that acute problem, medical authors advised stirring the milk continuously and, if the heat was excessive, to lower the temperature of the pot walls with a sponge soaked in cold water, as in this way, the sticking residue would not become charred so quickly. A vessel (mentioned by Dioscorides, Pliny and Galen) lowered into milk during the process of heating, in turn, prevented the liquid from boiling over, because it reduced surface tension of the liquified floating fat and allowed the water contained in milk to evaporate. Such a procedure was worthwhile because good milk was a valuable product, and therefore a cook would actually cry over spilt milk. In turn, mentions of honey and salt added to milk may mean that it was commonly known that they also impeded the process of natural fermentation[86].

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milk was of good quality (pure), cf. *Geoponica*, XVIII, 20. The cited fragments prove that the quality of milk available on the market fluctuated, and the purchaser had to check it in order to avoid a poor quality product.

[83] Oribasius, *Collectiones medicae*, II, 61, 8, 1 – 10, 2; Oribasius, *Synopsis*, IV, 40, 4, 2 – 6, 3; Aëtius of Amida, II, 97, 1–3; Paul of Aegina, I, 87, 1, 10–13.

[84] Galen, *De alimentorum facultatibus*, 682, 16 – 683, 4, vol. VI; Oribasius, *Collectiones medicae*, III, 30, 4, 2–7; Oribasius, *Synopsis*, IV, 30, 5, 2 – 6, 3; Oribasius, *Libri ad Eunapium*, II, 1, g, 5, 1 – 7, 1; Aëtius of Amida, II, 95, 1–28; Anthimus, 75; Paul of Aegina, I, 88, 1, 5–8; VII, 3, 3, 6–7.

[85] Since Anthimus warns his readers against boiling milk in bronze pots (Anthimus, 70), we may assume that he recommended clay vessels for that purpose, because the metal spoiled the milk's flavour.

[86] None of the physicians admit it directly, and yet we draw this conclusion when interpreting, for instance, a fragment from the work *De observatione ciborum*

From the analysed treatises, we learn that milk was often boiled with cereal products. The physicians wrote that such additives generated thick juices, which not only increased the nutritional value of the dish but also modified the properties of the milk itself (rendering it less carminative and increasing its thickness, which, however, could also lead to blockages in the liver and the formation of kidney stones)[87]. Though we can surmise that such dishes were usually cooked over a fire in ceramic vessels, Anthimus informed us that this foodstuff could also be prepared by immersing hot stones or iron discs in milk. At that point, appropriately selected (cereal) ingredients were added, and, subsequently, the vessel was left to simmer on a low flame, with its content most likely being stirred occasionally to prevent the contents from burning[88]. And yet one more remark. Even if medical literature teaches that milk was predominantly the peasantry's staple food[89], given the fact that Anthimus' work was dedicated to Theuderic, the leader of the Francs, one can conclude that the method he described was employed more for the purpose of feeding the rich than the poor. All in all, judging by the information provided by medical sources, milk soups (or gruels) were equally popular in antiquity and Byzantium[90], and they were prepared with the addi-

(A n t h i m u s, 76). Honey and salt were, in that period, commonly used preservatives – A p i c i u s, I, 20. On preserving food by means of the aforementioned substances, cf. A. D a l b y, *Food in the Ancient World from A to Z*, London–New York 2003, p. 95–96; M. K o k o s z k o, *Ryby i ich znaczenie w życiu codziennym ludzi późnego antyku i wczesnego Bizancjum (III–VII w.)*, Łódź 2005, p. 41, 107–109.

[87] G a l e n, *De alimentorum facultatibus*, 687, 11–13, vol. VI.

[88] A n t h i m u s, 75.

[89] G a l e n, *De alimentorum facultatibus*, 494, 16 – 495, 1, vol. VI; 523, 16 – 524, 3, vol. VI; 532, 19 – 533, 3, vol. VI; G a l e n, *De victu attenuante*, 32, 1–4. On the same subject, cf. J.P. A l c o c k, *Food in the Ancient World*, Westport–London 2006, p. 159; M.J. W i l k i n s, S. H i l l, *Food...*, p. 119. Milk as a foodstuff of peasantry, cf. *ibidem*, p. 24.

[90] Such dishes were already known in the times of Marcus Portius Cato (C a t o, 86). On the same subject – P. B e r d o w s k i, *Przysmaki Katona, czyli o najstarszych przepisach kulinarnych Rzymian*, NF 3, 1998, p. 179–180.

tion of such cereal products as *áleuron* flour[91], starch[92], *chóndros*[93], spelt groats known as *trágos*[94], *álfita*[95], durum wheat flour (*semídalis*)[96], rice[97],

[91] Galen indicates that such a foodstuff made from the wheat *áleuron* generates good humours and is nutritious. At the same time, however, he warns the reader that it may lead to liver blockages and contribute to the formation of kidney stones (Galen, *De alimentorum facultatibus*, 494, 16 – 495, 14, vol. VI). The physician also mentions the practice of preparing milk soup with the addition of millet *áleuron* or starch, which he describes as a foodstuff generating thick juices (Galen, *De rebus boni malisque suci*, 767, 15–16, vol. VI). *Áleuron* in milk within Byzantine source texts – Oribasius, *Collectiones medicae*, I, 7, 1, 1 – 7, 4 (*áleuron* in milk – I, 7, 6, 1–2); I, 15, 1, 1 – 4, 4 (*áleuron* in milk – I, 15, 4, 1–4); III, 25, 1, 1 – 8, 2 (*áleuron* in milk – III, 25, 6, 2 – 7, 1); Oribasius, *Synopsis*, IV, 24, 1, 1 – 8, 2 (*áleuron* in milk – IV, 24, 6, 2 – 7, 1); Oribasius, *Libri ad Eunapium*, I, 41, 1, 1 – 7, 2 (*áleuron* in milk – I, 41, 6, 1); *De cibis*, XI, 1–12 (*áleuron* in milk – XI, 10–11). Cf. M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część I, *Zboża i produkty zbożowe w źródłach medycznych antyku i wczesnego Bizancjum (II–VII w.)*, Łódź 2014, p. 81, 95, 102, 110; iidem, *Cereals of Antiquity and Early Byzantine Times. Wheat and Barley in Medical Sources*, transl. K. Wodarczyk, M. Zakrzewski, M. Zytka, Łódź 2014, p. 84–85, 98, 106, 113.

[92] Galen, *De alimentorum facultatibus*, 687, 14, vol. VI; Aëtius of Amida, II, 97, 9. Cf. M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Zboża i produkty zbożowe...*, p. 103, 140; iidem, *Cereals...*, p. 106–107, 143; C. Cerchiai Manodori Sagredo, *Fiori...*, p. 30.

[93] Galen, *De alimentorum facultatibus*, 687, 15, vol. VI; Oribasius, *Collectiones medicae*, IV, 7, 1, 1 – 38, 4 (*chóndros* boiled in milk with the addition of water – IV, 7, 31, 1 – 33, 1); Aëtius of Amida, II, 97, 1–11 (*chóndros* in milk – II, 97, 9). Cf. M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Zboża i produkty zbożowe...*, p. 102, 145; iidem, *Cereals...*, p. 105–106, 148.

[94] Galen, *De alimentorum facultatibus*, 687, 15, vol. VI; Aëtius of Amida, II, 97, 9; cf. M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Zboża i produkty zbożowe...*, p. 303; iidem, *Cereals...*, p. 304.

[95] According to Galen, *álfita* boiled in milk had a carminative effect – Galen, *De victu attenuante*, 37, 1 – 44, 4 (*álfita* in milk – 37, 3–4). Cf. M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Zboża i produkty zbożowe...*, p. 344–345, 374–380; iidem, *Cereals...*, p. 342–343. *Álfita* in milk in Byzantine source texts – Oribasius, *Collectiones medicae*, IV, 6, 1, 1 – 4, 5 (*álfita* boiled in milk with the addition of water – IV, 6, 2, 1–3).

[96] Aëtius of Amida, II, 97, 9. Cf. M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Zboża i produkty zbożowe...*, p. 95–96; iidem, *Cereals...*, p. 98–100.

[97] Galen, *De alimentorum facultatibus*, 687, 15, vol. VI; Aëtius of Amida, II, 97, 9. Cf. A. Dalby, *Tastes of Byzantium...*, p. 80; M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Zboża i produkty zbożowe...*, p. 533–534, 539.

or flatbreads called *lágana* or *ítria* (made from *áleuron* wheat)[98].

From the collected material, we can even reconstruct the methods of preparing some of the milk dishes. Most information on making a milk soup based on rice can be found in the treatise by Anthimus. According to his recommendations, the cereal should firstly be boiled in water, then goat milk ought to be added to it, and the mixture simmered until it had turned into a thick pulp[99]. In the collection of recipes attributed to Apicius and entitled *De re coquinaria* (4th c. AD)[100], in turn, we can

[98] G a l e n, *De alimentorum facultatibus*, 687, 15, vol. VI; A ë t i u s o f A m i d a, II, 97, 10; cf. M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, *Zboża i produkty zbożowe...*, p. 101, 166, 138; i i d e m, *Cereals...*, p. 105, 131, 141.

[99] Since this type of food slowed down the activity of the digestive system, it was recommended to patients with dysentery (A n t h i m u s, 70). It must be emphasised, however, that due to the high prices of rice, such a dish could only be afforded by the well-off. On the impact of the dish on the body and prices of rice, cf. J.P. A l c o c k, *Food...*, p. 34–35; M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, *Rice as a Foodstuff in Ancient and Byzantine "Materia Medica"*, SCer 3, 2013, p. 49–51, 58; M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, *Ryż jako pokarm i medykament w antycznej i bizantyńskiej literaturze medycznej*, PNH 12, 2013, p. 14, 18, 21–22, 26, 28, 31; i i d e m, *Rice as Foodstuff and Medication in Ancient and Byzantine Medical Literature*, [in:] *Standarti na vsekidnevieto prez srednovekovieto i novoto vreme/Standards of Everyday Life in the Middle Ages and in the Modern Times*, vol. III, *A Collection of Papers from the Intensive Programme "Standards of Everyday Life in the Middle Ages and in the Modern Times. Veliko Tarnovo 12th–23rd of May, 2013; 11th–22th of May, 2014*, eds. N. C h r i s t o v a, I. I v a n o v, G. G e o r i j e v a, Veliko Tărnovo 2014, p. 66, 71, 73–75, 77–80; i i d e m, *Rice as Food and Medication in Ancient and Byzantine Medical Literature*, BZ 108.1, 2015, p. 141, 146, 151. A contemporised recipe – M. G r a n t, *Roman Cookery. Ancient Recipes for Modern Kitchens*, London 2002, p. 154. Rice boiled in milk with the addition of honey or sugar as a dessert known in Byzantium, cf. A. D a l b y, *Tastes of Byzantium...*, p. 80. It is worth mentioning that Anthimus also writes about a dish – analogical (in preparation and effect) to the one presented above – which, instead of rice, was made from millet groats, cf. A n t h i m u s, 71. Also cf. Z. R z e ź n i c k a, M. K o k o s z k o, *Proso w gastronomii antyku i wczesnego Bizancjum*, VP 33, 2013, p. 413; M. K o k o s z k o, K. J a g u s i a k, Z. R z e ź n i c k a, *Zboża i produkty zbożowe...*, p. 465–466; i i d e m, *Common and Foxtail Millet in Dietetics, Culinary Art and Therapeutic Procedures of the Antiquity and Early Byzantium*, ŁSE 54, 2015, p. 88.

[100] On the cookbook, cf. A. D a l b y, *Food...*, p. 17–18; Ch. G r o c o c k, S. G r a i n g e r, *Introduction*, [in:] *Apicius. A Critical Edition with an Introduction and an English Translation of the Latin Recipe Text Apicius*, eds. Ch. G r o c o c k, S. G r a i n g e r, Blackawton–Totnes 2006, p. 13–38; M. K o k o s z k o, Z. R z e ź n i c k a, *Dietetyka*

read about a dish prepared with *tracta* (a term used in Latin to mean *lágana*)[101]. The author instructs the reader to crumble the product into milk diluted with water, boil the mixture on a small fire, and sweeten it with honey prior to serving. From the same recipe, we also learn that instead of *tracta*, one could use sweet bread made with the addition of grape must, known as *mustacei*[102]. Additionally, Apicius provides information on the practice of boiling pieces of regular white bread in goat milk, which (having soaked up the liquid) was eaten with a spoon[103].

As certified by the same collection, the culinary art of the period did not use milk exclusively to make cereal pulp, but milk was also a component of dishes made from offal and meat. What we find there, for instance, is a suggestion that the livers[104] and lungs[105] of goatlings and lambs (prior to heat processing) should be soaked in a mixture made from milk, honey and eggs[106]. From other recipes, we can conclude that milk went well with the taste of roast goatling, and thus, this type of

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w De re coquinaria, PNH 10.2, 2011, p. 5–25; M. K o k o s z k o, Z. R z e ź n i c k a, K. J a g u s i a k, *Health and Culinary Art in Antiquity and Early Byzantium in the Light of De re coquinaria*, SCer 2, 2012, p. 145–164; W.A. N a d l e r, *Collecting and Interpreting Apicius in Fifteenth-Century Italy. Manuscript Tradition and Circulation of Culinary/Dietary Knowledge*, FH 14.2–3, 2016, p. 183–203.

[101] A recipe for *tracta* – C a t o, 76, 1–2. A contemporised recipe – P. F a a s, *Around the Roman Table. Food and Feasting in Ancient Rome*, transl. S. W h i t e s i d e, Chicago 2005, p. 182–183. Recipes that use *tracta*, for example – C a t o, 77; 78. *Tracta* was discussed by, for instance J. S o l o m o n, *"Tracta". A Versatile Roman Pastry*, H 106.4, 1978, p. 539–556; S. H i l l, A. B r y e r, *Byzantine Porridge Tracta, Trachanás and Trahana*, [in:] *Food...*, p. 44–54; S. W e i n g a r t e n, *The Debate about Ancient Tracta: Evidence from the Talmud*, FH 2.1, 2004, p. 21–39; J.P. A l c o c k, *Food...*, p. 154. On the subject of *ítria* in Byzantine gastronomy – A. D a l b y, *Tastes of Byzantium...*, p. 79.

[102] A p i c i u s, V, 1, 3. A recipe for *mustacei*, cf. C a t o, 121. A contemporised recipe – M. G r a n t, *Roman...*, p. 109–111. On *mustacei*, cf. P. B e r d o w s k i, *Przysmaki...*, p. 178. *Tracta* with the addition of milk could also be an additive to meat dishes. In a culinary *opusculum*, we find, for instance, a recipe for chicken in a sauce made from *tracta* boiled in milk and seasoned with honey, pepper, lovage and grape must (*defritum*), cf. A p i c i u s, VI, 8, 13. On the same subject, cf. S. H i l l, A. B r y e r, *Byzantine Porridge...*, p. 47.

[103] A n t h i m u s, 75. A contemporised recipe, cf. M. G r a n t, *Roman...*, p. 71.

[104] A p i c i u s, VII, 10, 1. Cf. J.P. A l c o c k, *Food...*, p. 64.

[105] A p i c i u s, VII, 10, 2.

[106] The marinade intended for lungs should also contain some salt.

delicate meat was served in a sauce based on milk, pepper, fish juice, boiled grape must (*caroenum*), and olive oil[107]. Milk (together with honey and a pulp made from pepper, lovage, ferula root, laurel berries, anacyclus, animal brains, fish sauce, and salt) was also used as an ingredient of forcemeat in the sausage which was roasted with goatling meat[108].

Milk was one of the ingredients of a sweet, salty and spicy casserole called *patina*. It was listed in the recipe together with nuts, honey, pepper, fish sauce, eggs, and a small amount of wine and olive oil[109]. It is worth mentioning that in the chapter on *patinae* we find *patina ex lacte*, i.e., a casserole with milk, whose list of ingredients included a whole spectrum of products such as pistachio nuts, miscellaneous vegetables (e.g., beetroots, leeks, celery), seafoods (e.g., jellyfish, oysters), chicken meat, sausages, offal (brain, liver), hard-boiled eggs, and fresh cheese. However, the final part of the recipe seems to be the most important for the deliberations herein, as it talks about the preparation of a sauce in which the dish was simmered. Its ingredients included pepper, lovage, celery and ferula seeds, to which milk and raw eggs were added[110].

Last but not least, milk was a virtually omnipresent ingredient in desserts. For instance, wheat bread was dipped in it, then fried in olive oil and glazed with honey[111]. According to another recipe, milk was used to boil delicate wheat flour until it turned into a thick mass, which was later cut into smaller portions, fried in olive oil, glazed with honey and

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[107] A p i c i u s, VIII, 6, 6. This dish could also be prepared with lamb. An alternative recipe for a sauce with milk to go with goatling or lamb meat – A p i c i u s, VIII, 6, 7. On milk as an ingredient of sauces in the quoted *opusculum* – J. S o l o m o n, *The Apician Sauce. Ius Apicianum*, [in:] *Food...*, p. 120.

[108] Prior to heat treatment, both products were wrapped in animal peritoneum, which protected them against excessive desiccation (A p i c i u s, VIII, 6, 11).

[109] A p i c i u s, IV, 2, 16. Contemporised versions of the recipe, cf. A. D a l b y, S. G r a i n g e r, *The Classical Cookbook*, London 2000, p. 139; P. F a a s, *Around...*, p. 240–241; S. G r a i n g e r, *Cooking Apicius. Roman Recipes for Today*, Blackawton–Totnes 2006, p. 121.

[110] A p i c i u s, IV, 2, 13.

[111] A p i c i u s, VII, 11, 3.

sprinkled with pepper[112]. The same collection contains a recipe for a dish equivalent to a sweet omelette, which was prepared by frying a mixture of milk, eggs, and olive oil in a pan. Prior to serving, it was covered with honey and spiced with pepper[113].

[112] A p i c i u s, VII, 11, 6. A contemporised recipe – S. G r a i n g e r, *Cooking...*, p. 119–120.

[113] A p i c i u s, VII, 11, 8. Other recipes for desserts with milk – A p i c i u s, VII, 11, 2; VII, 11, 5; VII, 11, 7. A contemporised recipe – VII, 11, 5, cf. S. G r a i n g e r, *Cooking...*, p. 122. A sweet dish made from milk (and honey) is also mentioned by A t h e n a e u s o f N a u c r a t i s, XIV, 56 e (56, 1–2). On the practice of using milk for making desserts, cf. J.M. W i l k i n s, S. H i l l, *Food...*, p. 126; I. A n a g n o s t a k i s, *Byzantine Delicacies*, [in:] *Flavours and Delights...*, p. 89.

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III

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Oksýgala in Dietetics, Medical Procedures, and Culinary Art: Galen and his Followers

In *De alimentorum facultatibus*, Galen interlaces the characteristics of *oksýgala* with a description of properties typical of fresh milk[1]. This type

[1] G a l e n, *De alimentorum facultatibus*, 689, 8 – 696, 6, vol. VI. Soured (or fermented) milk in Greek and Roman antiquity – J. A n d r é, *L'alimentation et la cuisine à Rome*, Paris 1961, p. 159–160; A. D a l b y, *Siren Feasts. A History of Food and Gastronomy in Greece*, London–New York 1996, p. 66, 200; S. H i l l, A. B r y e r, *Byzantine Porridge Tracta, Trachanás and Trahana*, [in:] *Food in Antiquity*, eds. J. W i l k i n s, D. H a r v e y, M. D o b s o n, Exeter 1999, p. 45. J.P. A l c o c k, *Milk and its Products in Ancient Rome*, [in:] *Milk. Beyond the Dairy. Proceedings of the Oxford Symposium on Food and Cookery 1999*, ed. H. W a l k e r, Totnes 2000, p. 32; C.A. D é r y, *Milk and Dairy Products in the Roman Period*, [in:] *Milk...*, p. 120–121; A. D a l b y, *Food in the Ancient World from A to Z*, London–New York 2003, p. 218; P. F a a s, *Around the Roman Table. Food and Feasting in Ancient Rome*, transl. S. W h i t e s i d e, Chicago 2005, p. 124; J.P. A l c o c k, *Food in the Ancient World*, Westport–London 2006, p. 83, 159; D.L. T h u r m o n d, *A Handbook of Food Processing in Classical Rome. For her Bounty no Winter*, Leiden–Boston 2006, p. 192–193; A. D a l b y, *Cheese. A Global History*, London 2009, p. 75; H. V e l t e n, *Milk. A Global History*, London 2010, p. 31; D. B r a u n d, *Food among Greeks of the Black Sea: the Challenging Diet of Olbia*, [in:] *A Companion to Food in the Ancient World*, eds. J. W i l k i n s, R. N a d e a u, Malden, Mass.–Oxford–Chichester 2015, p. 300; A. B a s c h a l i, A.-L. M a t a l a s, *Indigenous Fermented Milks in the Mediterranean.*

of account may hinder reading, since it makes the passage quite puzzling, and yet we have no other way but to use this fragment to determine the basic properties of the foodstuff[2].

Though it is not said by the author *expressis verbis*, from the analysed passage we should understand that the noun *oksýgala* was used to refer to milk which has undergone a process of natural fermentation, and thereby became sour[3]. The conclusion is supported by the fact that the word itself is a compound and consists of the noun *gála* preceded by the adjective *oksýs*, meaning acidic or sharp. Thus, the term itself differentiates the product from other sorts of set milk, like, for instance, from *schíston*, which was produced not due to fermentation but thanks to the addition of rennet and/or by means of heat processing.

As for its qualities, at the beginning of his disquisition Galen states that this product has a harmful effect on teeth in people with a cold or a balanced constitution of the body (*krásis*). We may conclude from the text that this action is related to the cooling properties of soured milk (which result from its acidification, and which were absent from fresh milk), since, having consumed the foodstuff, people with the former constitution were exposed to a further reduction in body temperature, whereas the latter could suffer from the disturbance of temperature balance. In both cases, it led to painful oversensitivity of the teeth (*haimodía*). One, however, was able to adapt to the influence of the foodstuff. The physician believes that the time required for the body to become accustomed to soured milk depends on the person's *krásis*. Thus, Galen explains that it is better digested by people with warm stomachs, and that

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A Heritage of Health and Civilisation, [in:] *Latte e latticini. Aspetti della produzione e del consume nella società miditerranee dell'Antichità e del Medioevo. Atti del Convegno Internazionale di Studio promosso dall'IBAM – CNR e dall'IRS – FNER nell'ambito del Progetto MenSALe Atene, 2–3 Ottobre 2015*, eds. I. A n a g n o s t a k i s, A. P e l l e t t i e r i, Lagonegro 2016, p. 190.

[2] The product is absent from other Galen's works.

[3] This conclusion is supported by information from Galen on the taste of soured milk, which is described as bearing a resemblance to unripe mulberries, which were classified among foodstuffs that are styptic and sharp in taste. Thus, the sourness of this type of milk must have been the effect of a natural process (G a l e n, *De alimentorum facultatibus*, 689, 14–15, vol. VI).

this process does not happen in those with a cold disposition. By the same token, in people with a moderate humoral constitution, it may be accompanied by a number of complications[4]. As far as other dangers of consuming *oksýgala* are concerned, the consumption of soured milk leads to the generation of so-called raw juices within the body[5]. Furthermore, Galen writes that soured milk is a naturally obtained milk curd[6] (and that is why *oksýgala* shares the qualities ascribed to it), a statement which explains why soured milk stimulates the body to produce thick humours[7]. Consequently, he warns the reader against consuming it too often, indicating that it might lead to the formation of kidney stones[8]. Difficult to notice though it is, one can claim that the passage also addresses the physical qualities of the product, alluding to the fact that the soured milk Galen knew was very thick (appearing almost solid), and, in this respect, more similar to curd than to milk itself. Accordingly, we can infer that the *oksýgala* the physician wrote about resembled more of a typical Greek set yogurt than of a liquid.

This disquisition, in a significantly simplified form, is repeated in almost all the other Byzantine medical treatises already quoted herein. For instance, an analogical version of Galen's theory can be found in *Collectiones medicae* by Oribasius[9], who also emphasised the most crucial

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[4] G a l e n, *De alimentorum facultatibus*, 689, 9 – 690, 7, vol. VI.

[5] G a l e n, *De alimentorum facultatibus*, 692, 10–16, vol. VI.

[6] G a l e n, *De alimentorum facultatibus*, 692, 5–6, vol. VI.

[7] G a l e n, *De alimentorum facultatibus*, 692, 10, vol. VI.

[8] G a l e n, *De alimentorum facultatibus*, 693, 1–7, vol. VI.

[9] O r i b a s i u s, *Collectiones medicae*, II, 60, 1, 1 – 3, 2. On soured (or fermented) milk in the late antiquity and Byzantine period – E. K i s l i n g e r, *Les chrétiens d'Orient: règles et réalités alimentaires dans le monde byzantin*, [in:] *Histoire de l'alimentation*, eds. J.L. F l a n d r i n, M. M o n t a n a r i, Paris 1996, p. 342; i d e m, *Trōgontas kai pinontas ektos spitiou*, [in:] *Byzantinōn diatrofē kai mageireiai. Praktika ēmeridas "Peri tes diatrofēs sto Byzantio". Thessalonikē Mouseio Byzantinou Politismou 4 Noembriou 2001. Food and Cooking in Byzantium. Proceedings of the Symposium "On Food in Byzantium". Thessaloniki Museum of Byzantine Culture 4 November 2001*, ed. D. P a p a n i k o l a-B a k i r t z i, Athena 2005, p. 55; Ch. B o u r b o u, M.P. R i c h a r d s, *The Middle Byzantine Menu: Palaeodietary Information from Isotopic Analysis of Humans and Fauna from Kastella, Crete*, IJOa 17, 2007, p. 65; A. D a l b y, *Tastes of Byzantium. The Cuisine of a Legendary Empire*, London–New York 2010, p. 65–66, 220; M. K o k o s z k o, *Rola nabiału*

properties of the foodstuff in his dietetic catalogues. Namely, he listed *oksýgala* among the products generating raw humours[10]. In addition, the physician also classified it as one of the stodgy foodstuffs[11] as well as one generating thick[12] and cold[13] juices. An identical arrangement of data can be traced in *Iatricorum libri* by Aëtius of Amida[14]. In turn, an

w diecie późnego antyku i wczesnego Bizancjum (IV–VII w.), ZW 16, 2011, p. 17–19; I. A n a g n o s t a k i s, *Dining with Foreigners*, [in:] *Flavours and Delights. Tastes and Pleasures of Ancient and Byzantine Cuisine*, ed. I. A n a g n o s t a k i s, Athens 2013, p. 162; Ch. B o u r b o u, *All in the Cooking Pot. Advances in the Study of Byzantine Diet*, [in:] *Flavours and Delights...*, p. 67; J. K o d e r, *Everyday Food in the Middle Byzantine Period*, [in:] *Flavours and Delights...*, p. 145; i d e m, *Natural Environment and Climate, Diet, Food, and Drink*, [in:] *Heaven & Earth. Art of Byzantium from Greek Collections*, eds. A. D r a n d a k i, D. P a p a n i k o l a-B a k i r t z i, A. T o u r t a, Athens 2013, p. 215; i d e m, *Cuisine and Dining in Byzantium*, [in:] *Byzantine Culture. Papers from the Conference "Byzantine Days of Istanbul" Held on the Occasion of Istanbul Being European Cultural Capital 2010. Istanbul, May 21–23 2010*, ed. D. S a k e l, Ankara 2014, p. 428, 433; Ch. B o u r b o u, S. G a r v i e-L o k, *Bread, Oil, Wine and Milk: Feeding Infants and Adults in Byzantine Greece*, [in:] *Archaeodiet in the Greek World. Dietary Reconstruction from Stable Isotope Analysis*, eds. A. P a p a t h a n a s i o u, M.P. R i c h a r d s, S.C. F o x, Princeton 2015, p. 174; Z. R z e ź n i c k a, *Milk and Dairy Products in Ancient Dietetics and Cuisine According to Galen's De alimentorum facultatibus and Selected Early Byzantine Medical Treatises*, [in:] *Latte e latticini...*, p. 55–56, 60–61, 63, 68–69.

[10] O r i b a s i u s, *Collectiones medicae*, III, 6, 1, 1 – 2, 7 (soured milk – III, 6, 2, 6); O r i b a s i u s, *Synopsis*, IV, 5, 1, 1 – 2, 7 (soured milk – IV, 5, 2, 6); O r i b a s i u s, *Libri ad Eunapium*, I, 22, 1, 1 – 2, 8 (soured milk – I, 22, 2, 7).

[11] This property was particularly noticeable for people with a cool constitution of the stomach – O r i b a s i u s, *Collectiones medicae*, III, 18, 1, 1 – 13, 1 (soured milk – III, 18, 7, 1–2); O r i b a s i u s, *Synopsis*, IV, 17, 1, 1 – 12, 1 (soured milk – IV, 17, 5, 1–2); O r i b a s i u s, *Libri ad Eunapium*, I, 35, 1, 1 – 8, 2 (soured milk – I, 35, 5, 1).

[12] O r i b a s i u s, *Collectiones medicae*, III, 3, 1, 1 – 7, 3 (soured milk – III, 3, 6, 5); O r i b a s i u s, *Synopsis*, IV, 2, 1, 1 – 5, 3 (soured milk – IV, 2, 4, 6); O r i b a s i u s, *Libri ad Eunapium*, I, 19, 1, 1 – 5, 4 (soured milk – I, 19, 4, 6).

[13] O r i b a s i u s, *Collectiones medicae*, III, 7, 1, 1 – 2, 2 (soured milk – III, 7, 2, 1–2); O r i b a s i u s, *Synopsis*, IV, 6, 1, 1 – 2, 2 (soured milk – IV, 6, 2, 2); O r i b a s i u s, *Libri ad Eunapium*, I, 23, 1, 1–3 (soured milk – I, 23, 1, 3).

[14] The dietetic characteristics of soured milk, cf. A ë t i u s o f A m i d a, II, 98, 1–15. Dietetic catalogues mentioning soured milk, cf. A ë t i u s o f A m i d a, II, 241, 1–21 (soured milk – II, 241, 14) – soured milk as a foodstuff generating thick juices; II, 244, 1–7 (soured milk – II, 244, 7) – soured milk as a foodstuff generating raw humours; II, 245, 1–4 (soured milk – II, 245, 3) – soured milk as a foodstuff generating cold juices; II, 255, 1–25 (soured milk – II, 255, 12) – soured milk as a stodgy foodstuff.

approach that differs to a certain extent when compared to the aforementioned views, is the opinion expressed by Anthimus, who claims that soured milk does not have a harmful effect on healthy individuals since it does not coagulate within the stomach. At the same time, however, the physician suggests that it should be consumed with honey and oil made from unripe olives[15], which might be interpreted as revealing that both additives positively contributed to the transformation of *oksýgala* in the stomach (possibly, due to their thinning properties). The anonymous compiler of the short work entitled *De cibis*, in turn, confines himself to classifying soured milk as a foodstuff which leads to the generation of viscous[16] and acid[17] humours, which does not deviate from the line of reasoning we find in *De alimentorum facultatibus*. We can also reasonably assume that Paul of Aegina followed Galen's teachings, as he recommended it to patients suffering from anorexia caused by excessive calefaction of the body (accordingly, in cases of hot *dyskrasía*)[18].

Ancient and Byzantine texts show that *oksýgala* was not an unequivocal term. For instance, according to Pliny, the foodstuff named *oxygala* was a by-product obtained when butter was made. The encyclopaedist suggests that the foodstuff was solid and adds that it was seasoned with salt[19]. The definition does not mean, however, that the Romans treated the product exclusively as a second-class food obtained whenever another comestible was made. The information above is simply confirmation that no edible substances were wasted. Latin sources also speak

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[15] Anthimus, 78. The statement on the lack of harmfulness of the analysed foodstuff is difficult to understand. Perhaps, for the author, the consumption of the product which has already been coagulated excluded the possibility of its re-coagulation within the stomach. Moreover, he might have wanted to imply that the curd contained in soured milk was not as hard to digest as the one transformed into cheese.

[16] *De cibis*, XVIII, 1–16 (soured milk – XVIII, 11).

[17] *De cibis*, XX, 1–14 (soured milk – XX, 9).

[18] Paul of Aegina, III, 37, 4, 1 – 6, 19 (analysed extract – III, 37, 4, 16–21; soured milk – III, 37, 4, 18). Other (though rather few) examples of the use of soured milk in Byzantine therapeutics – M. Chronē, *Ē panida stēn diatrofē kai stēn iatrikē sto Byzantio*, Athenai 2012, p. 208–209.

[19] Pliny, XXVIII, 133, 1 – 134, 2. Cf. the part of the present book devoted to butter.

of the intentional production of *oxygala*. The most detailed description which allows us to reconstruct this type of technology is preserved in *De re rustica* by Columella (1st c. AD)[20], who starts his disquisition by familiarising the reader with the method of preparing an appropriate vessel in which the process is to take place[21]. The author recommends drilling a hole in the bottom of a brand-new pot and plugging it with a wooden stopper. Next, the freshest available sheep milk, seasoned with freshly collected herbs (wild marjoram, mint and coriander) and onion, should be poured into the pot and left for five days. Later, the stopper is removed to drain the precipitated whey. This operation is repeated over three days, at which time the herbs are also disposed of and substituted with crumbled dried thyme and oregano (or leek leaves), while the contents of the vessel are stirred. After two more days, the excess whey is drained again, the remaining milk curd is seasoned with salt, and the pot covered with a lid and sealed[22]. The recipe calls for

[20] On the author, cf. E.S. F o r s t e r, *Columella and his Latin Treatise On Agriculture*, GR 19.57, 1950, p. 123–128; I. M i k o ł a j c z y k, *Rzymska literatura agronomiczna*, Toruń 2004, p. 231–256; R.H. R o d g e r s, *L. Iunius Moderatus Columella of Gadēs (ca 40 – ca 70 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists. The Greek Tradition and its Many Heirs*, eds. P.T. K e y s e r, G. I r b y-M a s s i e, London–New York 2008, p. 456–457; Ch. R e i t z, *Columella, De re rustica*, [in:] *A Companion to the Neronian Age*, eds. E. B u c k l e y, M.T. D i n t e r, Chichester 2013, p. 275–287. On Columella's interest in health and wellbeing, cf. J. D r a y c o t t, *Roman Domestic Medical Practice in Central Italy*: *From the Middle Republic to the Early Empire*, London–New York 2019, p. 140–141.

[21] C o l u m e l l a, XII, 8, 1–3. The process described by Columella must have led to the production of a solid foodstuff, more analogical to quark than soured milk. As a result, this may be a Western variant of the recipe for cheese which in the East was called *oksygaláktinos*. On the same product cf. the section of this book devoted to cheese.

[22] C o l u m e l l a, XII, 8, 1–2. Later in the text (XII, 8, 3), the author also mentions two other recipes for *oxygala*. The first advises seasoning fresh milk with dried leaves of peppercress, previously soaked in brine for 24 hours, and the optional possibility to salt the obtained mixture. Once curd was formed, it was processed in the above presented fashion. The second recipe, in turn, involves pouring fresh milk into a vessel with the aforementioned (but fresh) leaves. After three days, the whey was removed and the foodstuff remaining within the pot seasoned with fresh summer savoury, dried and ground coriander, dill, thyme and celery seeds, and dry sieved salt. The product was also sealed to last.

a comment. The product obtained must have been far different from the *oksýgala* mentioned by Galen because it was entirely devoid of whey, and in this respect was similar to the foodstuff mentioned by Pliny. In other words, the work by Columella proves that the term *oksýgala/oxygala* was used not only to denote a drink but also a sort of cottage cheese spiced with herbs and salted. This can be confirmed by the use of the same term in the Byzantine treatise *Geoponica* (compiled between the 6th and the 10th c. AD)[23], whose author speaks about submerging *oksýgala* into olive oil or wrapping it up with terebinth leaves[24] – such a piece of advice could not concern liquids. On the other hand, *Geoponica* also uses a noun which might have been employed as an alternative term to denote genuine soured milk. It was *mélke* in Greek and *melca* in Latin. The author writes that it was obtained by pouring fresh milk into the pots in which vinegar was previously boiled. The traces of vinegar made it ready for consumption the next day[25]. The two terms are also mentioned as equivalent by Anthimus, but it is impossible to infer from his words whether the author meant cheese of soured milk[26]. Whatever the case, the first option must have been quite widespread since the culinary *opusculum* attributed to Apicius advises the reader to serve *melca* with pepper, fish sauce (or salt), and coriander[27], which appears to refer more to a solid than a drink.

[23] On the treatise, cf. R.H. R o d g e r s, *The Apuleius of the "Geoponica"*, CSCA 11, 1978, p. 197–207; A.A. C a r r a r a, *Geoponica and Nabatean Agriculture: A New Approach into their Sources and Authorship*, ASP 16, 2006, p. 105–123; R.H. R o d g e r s, *Geōponika (ca 950 CE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 346; A. D a l b y, *Introduction*, [in:] *Geoponika. Farm Work. A Modern Translation of the Roman and Byzantine Farming Book*, transl. A. D a l b y, Blackawton–Totnes 2011, p. 9–18; I. M i k o ł a j c z y k, *Wstęp*, [in:] *Kassianus Basssus, Geoponika, bizantyńska encyklopedia rolnicza*, transl. I. M i k o ł a j c z y k, Toruń 2012, p. 7–45.

[24] *Geoponica*, XVIII, 12, 3.

[25] *Geoponica*, XVIII, 21. Just like Columella, the author of the recipe stresses that new vessels should be used to prepare this type of foodstuff, which probably stems from the fact that it was extremely difficult to clean them from milk residue.

[26] A n t h i m u s, 78.

[27] A p i c i u s, VII, 11, 9.

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IV

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Cheese in Dietetics, Pharmacology, Therapeutic Procedures and Culinary Art: Galen and his Followers

Zofia Rzeźnicka

1. Galen and later medical authors on the dietetic properties of cheese

On the basis of the dietetic characteristics of cheese (*tyrós*; plural: *tyroí*) within *De alimentorum facultatibus*, we may conclude that Galen was not particularly fond of this product, though his lack of appreciation seems to have especially concerned its mature varieties[1]. It should, however, be admitted that he explains the reasons

[1] G a l e n, *De alimentorum facultatibus*, 696, 7 – 699, 9, vol. VI. On the impact of the consumption of cheese on health – E. C r a i k, *Hippocratic diaita*, [in:] *Food in Antiquity*, eds. J. W i l k i n s, D. H a r v e y, M. D o b s o n, Exeter 1999, p. 346–347. Cheese in Greek and Roman antiquity – J. A n d r é, *L'alimentation et la cuisine à Rome*, Paris 1961, p. 155–158; R.W. D a v i e s, *The Roman Military Diet*, Brit 2, 1971, p. 124–125, 127–128, 132, 135; S. I s a g e r, J.E. S k y d s g a a r d, *Ancient Greek Agriculture. An Introduction*, London–New York 1992, p. 91; M.-C. A m o u r e t t i, *Villes et campagnes grecques*, [in:] *Histoire de l'alimentation*, eds. J.L. F l a n d r i n, M. M o n t a n a r i, Paris 1996, p. 139; M. C o r b i e r, *La fève et la murène: hiérarchies sociales des nourritures à Rome*, [in:] *Histoire...*, p. 218, 224, 227–228; A. D a l b y, *Siren Feasts. A History of Food and Gastronomy in*

for such negative opinion. Notably, he maintains that, due to the rennet used in cheesemaking and the process of ripening, the final product loses too much of its moisture content to be easily digested and tastes pungent

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Greece, London–New York 1996, p. 66, 108; G. S a s s a t e l l i, *L'alimentation des Etrusques*, [in:] *Histoire...*, p. 188; M. T o u s s a i n t-S a m a t, *Histoire naturelle et morale de la nourriture*, Paris 1997, p. 150–151; A. D a v i d s o n, *Cheese*, [in:] *The Oxford Companion to Food*, ed. A. D a v i d s o n, Oxford–New York 1999, p. 159; P. G a r n s e y, *Food and Society in Classical Antiquity*, Cambridge 1999, p. 13, 125; J.P. A l c o c k, *Milk and its Products in Ancient Rome*, [in:] *Milk. Beyond the Dairy. Proceedings of the Oxford Symposium on Food and Cookery 1999*, ed. H. W a l k e r, Totnes 2000, p. 34–37; J. A u b e r g e r, *«Du prince au berger, tout homme a son content de fromage...» Odyssée, 4, 87–88*, REG 113, 2000, p. 1–41; C.A. D é r y, *Milk and Dairy Products in the Roman Period*, [in:] *Milk...*, p. 118–120, 122–123; R.I. C u r t i s, *Ancient Food Technology*, Leiden–Boston–Köln 2001, p. 315–316, 400–402; A. D a l b y, *Food in the Ancient World from A to Z*, London–New York 2003, p. 80–81; G. M a l i n o w s k i, *Zwierzęta świata antycznego. Studia nad Geografią Strabona*, Wrocław 2003, p. 51; P. F a a s, *Around the Roman Table. Food and Feasting in Ancient Rome*, transl. S. W h i t e s i d e, Chicago 2005, p. 168–170; J.P. A l c o c k, *Food in the Ancient World*, Westport–London 2006, p. 83–84, 154, 159; J.M. W i l k i n s, S. Hill, *Food in the Ancient World*, Malden, Mass.–Oxford 2006, p. 18, 41, 64, 105, 162–163; W. C a v a n a g h, *Food Preservation in Greece during the Late and Final Neolithic Periods*, [in:] *Cooking Up the Past: Food and Culinary Practices in the Neolithic and Bronze Age Aegean*, eds. C. M e e, J. R e n a r d, Oxford 2007, p. 115–116; A. D a l b y, *Cheese*, [in:] *The Oxford Companion to Italian Food*, ed. G. R i d l e y, Oxford 2007, p. 114–116; L. C i v i t e l l o, *Cuisine and Culture. A History of Food and People*, Hoboken 2008, p. 27, 33–34, 40, 45–46, 48; A. D a l b y, *Cheese. A Global History*, London 2009, p. 39–45, 54–58, 98–100, 103–104, 109–110; B. S a n t i l l o F r i z e l l, *Lana, carne, latte. Paesaggi pastorali tra mito e realtà*, Firenze 2010, p. 129–136; P.S. K i n d s t e d t, *Cheese and Culture. A History of Cheese and its Place in Western Civilization*, White River Junction 2012, p. 63–115; F. M c C o r m i c k, *Cows, Milk and Religion: The Use of Dairy Produce in Early Societies*, AZoo 47.2, 2012, p. 105–107; A. D a l b y, *The Flavours of Classical Greece*, [in:] *Flavours and Delights. Tastes and Pleasures of Ancient and Byzantine Cuisine*, ed. I. A n a g n o s t a k i s, Athens 2013, p. 18–22; J. P a u l a s, *Cheese*, [in:] *The Encyclopedia of Ancient History*, vol. III, eds. R.S. B a g n a l l, K. B r o d e r s e n, C.B. C h a m p i o n, A. E r s k i n e, S.R. H u e b n e r, Oxford 2012, p. 1445–1446; Ch. C h a n d e z o n, *Animals, Meat, and Alimentary By-Products: Patterns of Production and Consumption*, [in:] *A Companion to Food in the Ancient World*, eds. J. W i l k i n s, R. N a d e a u, Malden, Mass.–Oxford–Chichester 2015, p. 137, 140, 142––143; J.F. D o n a h u e, *Roman Dining*, [in:] *A Companion...*, p. 261; S. H i t c h, *Sacrifice*, [in:] *A Companion...*, p. 344; M. L e i g h, *Food in Latin Literature*, [in:] *A Companion...*, p. 48; N. M o n t e i x, *Baking and Cooking*, [in:] *A Companion...*, p. 220; O. M u r r a y,

(which, in turn, reveals its warming properties – dangerous for some temperaments). As a result, the foodstuff increases thirst, grows stodgy, and stimulates the production of harmful and thick juices. Therefore, Galen advised the reader against consuming (especially mature) cheese, arguing that it does not provide the body with nutrients that are easily absorbed. Neither does it stimulate the body to excrete urine and non-liquefiable remnants of the process of digestion. As a result, cheese tends to upset the humoral balance of the body and contributes to the formation of kidney stones[2].

Galen has a slightly higher opinion of fresh cheese which is not pungent in taste, and even recommended the so-called *oksygaláktinos* made in Pergamum. In his opinion, when compared to other types, this one was not only tasty, but also rather light to digest and relatively easy to excrete. That is why it was believed to be healthy because it does not generate thick juices. Another cheese appreciated by Galen was the so-called *bathysikós*, which – as the physician emphasised – was particularly popular among wealthy Romans, and thus quite expensive[3].

Alluding to the presence of a variety of cheeses on the market of his time, Galen argues that what generally differentiated cheeses from one

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Athenaeus the Encyclopedist, [in:] *A Companion...*, p. 41; M. R o b i n s o n, E. R o w a n, *Roman Food Remains in Archaeology and the Contents of a Roman Sewer at Herculaneum*, [in:] *A Companion...*, p. 110; D.F. S m i t h, *Food and Dining in Early Christianity*, [in:] *A Companion...*, p. 364; J. W i l k i n s, *Medical Literature, Diet and Health*, [in:] *A Companion...*, p. 64; C. C e r c h i a i M a n o d o r i S a g r e d o, *Fiori per prima l'età dell'oro... fiumi di latte scorrevano (Ov. Met., I, 89;111)*, [in:] *Latte e latticini. Aspetti della produzione e del consume nella società miditerranee dell'Antichità e del Medioevo. Atti del Convegno Internazionale di Studio promosso dall'IBAM – CNR e dall'IRS – FNER nell'ambito del Progetto MenSALe Atene, 2–3 Ottobre 2015*, eds. I. A n a g n o s t a k i s, A. P e l l e t t i e r i, Lagonegro 2016, p. 21–30; A. D a l b y, R. D a l b y, *Gifts of the Gods. A History of Food in Greece*, London 2017, p. 49.

[2] G a l e n, *De alimentorum facultatibus*, 696, 8 – 697, 7, vol. VI. Analogical data on the harmful impact of cheese on the liver and its functioning, cf. G a l e n, *De rebus boni malisque suci*, 768, 6–10, vol. VI. Cheese as a foodstuff causing health problems, cf. G a l e n, *De victu attenuante*, 114, 3 – 115, 1.

[3] G a l e n, *De alimentorum facultatibus*, 697, 8–16, vol. VI. The Latin name of this cheese is *caseus Vatusicus*. It is discussed in the section devoted to the culinary application of cheese.

another was the type of milk they were made from, the applied technology of production, and freshness. Additionally, the quality of individual types of cheese was also determined by their texture and flavour[4]. As for the latter two criteria, he claims that soft cheeses were better than hard ones, while spongy (i.e., porous) ones and those of a looser consistency were superior to thick and firm ones. Furthermore, the author also advises the reader to avoid either sticky or crumbly cheeses, stating that the best products were somewhere in between. While discussing the flavour, Galen recommends the consumption of sweeter cheeses or those which contain moderate amounts of salt. At the end of the disussion, he also indicates the relationship between the smell and the digestion time, explaining that a long-lasting aroma (coming from the consumer's mouth) meant that the consumed cheese was stodgy[5].

Galen's teachings on cheese constituted a theory which survived antiquity and still held true in the early Byzantine period. That is why Oribasius, in order to give the dietetic characteristics of the foodstuff in his *Collectiones medicae*, quotes Galen's deliberations on milk and cheese, presenting them in a single coherent chapter[6]. In his typical fashion, the

[4] More on the subject, cf. the section devoted to the culinary application of cheese.

[5] G a l e n, *De alimentorum facultatibus*, 698, 1 – 699, 9, vol. VI. Information on the dietetic properties of cheese, depending on the type of milk used to produce it – G a l e n, *De rebus boni malisque suci*, 765, 3–7, vol. VI. This extract also contains the most important information on the dietetic properties of cheese.

[6] O r i b a s i u s, *Collectiones medicae*, II, 59, 1, 1 – 14, 5 (cheese – II, 59, 11, 1 – 14, 5). Cheese in late antiquity and Byzantium – A. D a l b y, *Siren Feasts...*, p. 190, 196; S. D a r, *Food and Archaeology in Romano-Byzantine Palestine*, [in:] *Food...*, p. 333; I. A n a g n o s t a k i s, *Trofikes dēlētēriaseis sto Byzantio. Diatrofikes antilēpseis kai symperifores (60s–110s ai.)*, [in:] *Byzantinōn diatrofē kai mageireiai. Praktika ēmeridas "Peri tes diatrofēs sto Byzantio". Thessalonikē Mouseio Byzantinou Politismou 4 Noembriou 2001. Food and Cooking in Byzantium. Proceedings of the Symposium "On Food in Byzantium". Thessaloniki Museum of Byzantine Culture 4 November 2001*, ed. D. P a p a n i k o l a -B a k i r t z i, Athena 2005, p. 89, 90–91; J.-C. C h e y n e t, *La valeur marchande des produits alimentaires dans l'Empire byzantin*, [in:] *Byzantinōn diatrofē...*, p. 40; A.A. D e m o s t h e n o u s, *The Scholar and the Partridge: Attitudes Relating to Nutritional Goods in the Twelfth Century from the Letters of the Scholar John Tzetzes*, [in:] *Feast, Fast or Famine. Food and Drink in Byzantium*, eds. W. M a y e r, S. T r z c i o n k a, Brisbane 2005, p. 30; L. G a r l a n d, *The Rhetoric of Gluttony and Hunger in Twelfth-Century Byzantium*, [in:] *Feast...*, p. 49; J. H a l d o n, *Feeding the Army: Food and Transport in Byzantium,*

author also lists the most important properties of cheese in dietetic catalogues, and the qualities therein follow the line of Galen's reasoning. For instance, he notices that the consumption of a fresh product facilitates

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ca 600–1100, [in:] *Feast...*, p. 86; E. K i s l i n g e r, *Trōgontas kai pinontas ektos spitiou*, [in:] *Byzantinōn diatrofē...*, p. 20–21; A.N.J. L o u v a r i s, *Fast and Abstinence in Byzantium*, [in:] *Feast...*, p. 197; K. P a r r y, *Vegetarianism in Late Antiquity and Byzantium: The Transmission of a Regimen*, [in:] *Feast...*, p. 183–184; Ch. B o u r b o u, M.P. R i c h a r d s, *The Middle Byzantine Menu: Palaeodietary Information from Isotopic Analysis of Humans and Fauna from Kastella, Crete,* IJOa 17, 2007, p. 65; M. G r ü n b a r t, *Store in a Cool and Dry Place: Perishable Goods and their Preservation in Byzantium*, [in:] *Eat, Drink and Be Merry (Luke 12:19). Food and Wine in Byzantium. In Honour of Professor A.A.M. Bryer*, eds. L. B r u b a k e r, K. L i n a r d o u, Aldershot 2007, p. 48–49; J. K o d e r, *Stew and Salted Meat – Opulent Normality in the Diet of Every Day?*, [in:] *Eat, Drink and Be Merry...*, p. 64–65, 71; A.-M. T a l b o t, *Mealtime in Monasteries: The Culture of the Byzantine Refectory*, [in:] *Eat, Drink and Be Merry...*, p. 114–115; A. D a l b y, *Tastes of Byzantium. The Cuisine of a Legendary Empire*, London–New York 2010, p. 72–74, 98; Ch. B o u r b o u, *Fasting or Feasting? Consumption of Meat, Dairy Products and Fish in Byzantine Greece. Evidence from Chemical Analysis*, [in:] *Zōa kai periballon sto Byzantio (7os–12os ai.)*, eds. I. A n a g n o s t a k i s, T.G. K o l i a s, E. P a p a d o p o u l o u, Athena 2011, p. 100–101; Ch. B o u r b o u, B.T. F u l l e r, S.J. G a r v i e-L o k, M.P. R i c h a r d s, *Reconstructing the Diets of Greek Byzantine Populations (6th–15th Centuries A.D.) Using Carbon and Nitrogen Stable Isotope Ratios*, AJPA 146, 2011, p. 571; M. G e r o l y m a t o u, *Ē ktēnotrofia sto Byzantio: apo tēn epibiōsē stēn emporeumatopoiēsē (8os–12os ai.)*, [in:] *Zōa...*, p. 423, 431–432; M. K o k o s z k o, *Rola nabiału w diecie późnego antyku i wczesnego Bizancjum (IV–VII w.)*, ZW 16, 2011, p. 15–21; i d e m, *Smaki Konstantynopola*, [in:] *Konstantynopol – Nowy Rzym. Miasto i ludzie w okresie wczesnobizantyńskim*, eds. M.J. L e s z k a, T. W o l i ń s k a, Warszawa 2011, p. 487–489; I. A n a g n o s t a k i s, *Byzantine Delicacies*, [in:] *Flavours and Delights...*, p. 86–87, 101, 103; i d e m, *Byzantine Diet and Cuisine. In between Ancient and Modern Gastronomy*, [in:] *Flavours and Delights...*, p. 52–53; Ch. B o u r b o u, *All in the Cooking Pot. Advances in the Study of Byzantine Diet*, [in:] *Flavours and Delights...*, p. 67; J. K o d e r, *Everyday Food in the Middle Byzantine Period*, [in:] *Flavours and Delights...*, p. 139, 144–145, 148; i d e m, *Natural Environment and Climate, Diet, Food, and Drink*, [in:] *Heaven & Earth. Art of Byzantium from Greek Collections*, eds. A. D r a n d a k i, D. P a p a n i k o l a-B a k i r t z i, A. T o u r t a, Athens 2013, p. 215; i d e m, *Cuisine and Dining in Byzantium*, [in:] *Byzantine Culture. Papers from the Conference "Byzantine Days of Istanbul" Held on the Occasion of Istanbul Being European Cultural Capital 2010. Istanbul, May 21–23 2010*, ed. D. S a k e l, Ankara 2014, p. 427, 429, 431, 433; Ch. B o u r b o u, S. G a r v i e-L o k, *Bread, Oil, Wine and Milk: Feeding Infants and Adults in Byzantine Greece*, [in:] *Archaeodiet in the Greek World. Dietary Reconstruction from Stable Isotope Analysis*, eds. A. P a p a t h a n a s i o u, M.P. R i c h a r d s, S.C. F o x, Princeton 2015, p. 174; B. C a s e a u, *Byzantium*, [in:] *A Companion...*, p. 365, 371; C. A n g e l i d i, I. A n a g n o s t a k i s,

the generation of black bile[7], whereas eating a mature cheese triggers the production of juices which he terms harmful[8]. Additionally, he places both types of cheese on the list of foodstuffs that are difficult to digest, indicating that old cheeses are worse, whereas fresh ones, such as *oksygaláktinos*, are easier for the body to assimilate[9]. For the same reason, the author also classifies both as foodstuffs generating thick juices and stresses that, in that matter, *oksygaláktinoi* appear to be slightly better[10]. He also notes that the consumption of fresh cheese with the addition of honey facilitates the work of the digestive system, and thus accelerates the excretion of undigested materia[11]. Furthermore, Oribasius writes that mature cheeses have warming properties that increase thirst[12], and fresh ones he attributes with a moderate cooling effect[13]. Finally, he also lists

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La concezione bizantina del ciclo del latte (X–XII secolo), [in:] *Latte e latticini...*, p. 155–157; M. L e o n t s i n i, G. M e r i a n o s, *From Culinary to Alchemical Recipes. Various Uses of Milk and Cheese in Byzantium*, [in:] *Latte e latticini...*, p. 205–222; Z. R z e ź n i c k a, *Milk and Dairy Products in Ancient Dietetics and Cuisine According to Galen's De alimentorum facultatibus and Selected Early Byzantine Medical Treatises*, [in:] *Latte e latticini...*, p. 56–58, 61–64, 69–70; A. D a l b y, R. D a l b y, *Gifts...*, p. 95–97, 108.

[7] O r i b a s i u s, *Collectiones medicae*, III, 9, 1, 1 – 2, 5 (cheese – III, 9, 2, 4); O r i b a s i u s, *Synopsis*, IV, 8, 1, 1 – 2, 5 (cheese – IV, 8, 2, 4); O r i b a s i u s, *Libri ad Eunapium*, I, 25, 1, 1 – 2, 4 (cheese – I, 25, 2, 3).

[8] O r i b a s i u s, *Collectiones medicae*, III, 16, 1, 1 – 18, 3 (cheese – III, 16, 7, 3); O r i b a s i u s, *Synopsis*, IV, 15, 1, 1 – 18, 4 (cheese – IV, 15, 6, 2); O r i b a s i u s, *Libri ad Eunapium*, I, 33, 1, 1 – 16, 4 (cheese – I, 33, 5, 2 this line contains an evident mistake by the scribe, who instead of the adjective *palaiós*, i.e., 'old', wrote the word *hapalós*, which means 'delicate', 'fresh').

[9] O r i b a s i u s, *Collectiones medicae*, III, 18, 1, 1 – 13, 1 (cheese – III, 18, 7, 2 – 8, 1); O r i b a s i u s, *Synopsis*, IV, 17, 1, 1 – 12, 1 (cheese – IV, 17, 5, 2 – 6, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 35, 1, 1 – 8, 2 (cheese – I, 35, 5, 2).

[10] O r i b a s i u s, *Collectiones medicae*, III, 3, 1, 1 – 7, 3 (cheese – III, 3, 6, 4–5); O r i b a s i u s, *Synopsis*, IV, 2, 1, 1 – 5, 3 (cheese – IV, 2, 4, 5–6); O r i b a s i u s, *Libri ad Eunapium*, I, 19, 1, 1 – 5, 4 (cheese – I, 19, 4, 5–6).

[11] O r i b a s i u s, *Collectiones medicae*, III, 29, 1, 1 – 22, 2 (cheese – III, 29, 12, 2); O r i b a s i u s, *Synopsis*, IV, 28, 1, 1 – 27, 2 (cheese – IV, 28, 15, 2); O r i b a s i u s, *Libri ad Eunapium*, I, 45, 1, 1 – 17, 1 (cheese – I, 45, 11, 3).

[12] O r i b a s i u s, *Collectiones medicae*, III, 31, 1, 1 – 8, 4 (cheese – III, 31, 7, 1 – 8, 1); O r i b a s i u s, *Synopsis*, IV, 31, 1, 1 – 8, 4 (cheese – IV, 31, 7, 1 – 8, 1); O r i b a s i u s, *Libri ad Eunapium*, I, 47, 1, 1–9 (cheese – I, 47, 1, 5).

[13] O r i b a s i u s, *Collectiones medicae*, XIV, 19, 1, 1–22 (cheese – XIV, 19, 1, 21–22); O r i b a s i u s, *Synopsis*, II, 7, 1, 1–14, (cheese – II, 7, 1, 13–14); O r i b a s i u s, *Libri ad Eunapium*, II, 4, 1, 1 – 4, 2 (cheese – II, 4, 1, 14 – 2, 1).

cheeses among the foodstuffs which induce the production of gases[14] and generate raw humours[15]. A similar approach is adopted by Aëtius of Amida, who, apart from a detailed description of the dietetic properties of cheese derived from Galen's output[16], accentuates its most typical features in his *materia medica*[17]. The same century also brought the deliberations by Anthimus, which generally correspond to the aforementioned opinions and beliefs[18]. What is worth mentioning, however, is the fact that the author of *De observatione ciborum* expands the discussed discourse with his observations on baked and boiled cheeses, surely addressing his own experiences. The physician objects to both these methods of cheese processing, arguing that they made the foodstuff exceptionally firm and salty, which, we can assume, rendered them particularly unfit for consumption[19]. Last but not least, it should be concluded that the already presented theory on cheese changed little in the later period, which is visible both in a brief and yet substantive passage compiled by Paul of Aegina[20] as well as in dietetic catalogues included in *De cibis*[21].

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[14] Oribasius, *Synopsis*, IV, 22, 1, 1 – 10, 1 (cheese – IV, 22, 1, 1).

[15] Oribasius, *Collectiones medicae*, III, 6, 1, 1 – 2, 7 (cheese – III, 6, 2, 6).

[16] Aëtius of Amida, II, 101, 1–23.

[17] Aëtius of Amida, II, 199, 1–3 (cheese – II, 199, 3) – cheese (unspecified type) as a foodstuff with mildly warming properties; II, 203, 1–13 (cheese – II, 203, 13–14) – soft and fresh cheese as a foodstuff with moderately cooling properties; II, 241, 1–21 (cheese – II, 241, 13–14) – cheese as a foodstuff generating thick juices; II, 246, 1–9 (cheese – II, 246, 8–9) – soft cheese as a foodstuff generating black bile; II, 253, 1–37 (cheese – II, 253, 12) – mature cheese as a foodstuff generating harmful humours (again, this line contains the same mistake, as the scribes uses the word *hapalós* instead of *palaiós*); II, 255, 1–25 (cheese – II, 255, 12–13) – mature and fresh cheese as a stodgy foodstuff; II, 265, 1–39 (cheese – II, 265, 23–24) – cheese with the addition of honey as a foodstuff facilitating the functioning of the digestive system, and accelerating the excretion of undigested material by the body; II, 267, 1–9 (cheese – II, 267, 6) – mature cheese as a foodstuff with warming properties.

[18] Anthimus, 79; 80.

[19] Anthimus, 81.

[20] Paul of Aegina, I, 89, 1, 1–4.

[21] *De cibis*, VII, 1–23 (cheese – VII, 11–12) – mature and fresh cheese as a stodgy foodstuff; XII, 1–37 (cheese – XII, 19) – fresh cheese with honey as a foodstuff accelerating digestion; XIV, 1–40 (cheese – XIV, 19) – mature cheese as a foodstuff generating harmful humours; XVIII, 1–16 (cheese – XVIII, 11) – mature cheese as a foodstuff generating sticky humours; XX, 1–14 (cheese – XX, 9) – cheese as a foodstuff generating sour juices.

Zofia Rzeźnicka

2. Galen and later medical authors on the pharmacological properties of cheese and its applications in therapeutics

In order to learn about the pharmacological theory on cheese adhered to by Galen and later medical doctors, one must refer first to *De simplicium medicamentorum temperamentis ac facultatibus*[22]. Therein, the teachings are divided into three sections. The first part forms a rather cursory introduction. The second passage includes somewhat disorganised pieces of information on the curative properties of cheese. The third, in turn, provides us with specific examples of the therapeutic application of cheese taken from Galen's personal experience and practice.

By way of introduction, the author quotes the already presented fact that cheeses were made from the thick element of milk, which was isolated once the whey had been separated[23].

As for data typical of the ancient *materia medica* discourse, one can only find the statement that a mature cheese was characterised by strong diaphoretic properties[24], while all types of fresh cheese possessed the ability to prevent the influx of harmful juices and to stimulate the body

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[22] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 269, 16 – 272, 8, vol. XII. Cheese in ancient and Byzantine therapeutics – H. K i n g, *Food and Blood in Hippokratic Gynaecology*, [in:] *Food...*, p. 355–356; J. A u b e r g e r, *Du prince...*, p. 31– 35; M. C h r o n ē, *Therapeies astheneiōn me zōikēs proeleuseōs yles sta byzantina iatrika keimena. Symbolē stēn meletē tōn antilēpseōn gia tis astheneies kai tis therapeies tous sto Byzantio*, BSym 20, 2010, p. 153, 157, 161; C.A. D é r y, *Milk...*, p. 123; M. C h r o n ē, *Ē panida stēn diatrofē kai stēn iatrikē sto Byzantio*, Athenai 2012, p. 217–227; M. K o k o s z k o, *Galaktologia terapeutyczna (γαλακτολογία ἰατρική) Galena zawarta w De simplicium medicamentorum temperamentis ac facultatibus*, PNH 14.2, 2015, p. 14–15, 20; i d e m, *Galen's Therapeutic Galactology (γαλακτολογία ἰατρική) in De simplicium medicamentorum temperamentis ac facultatibus*, [in:] *Latte e latticini...*, p. 40–42, 45–46; Z. R z e ź n i c k a, *Mleko i przetwory mleczne w medycynie wczesnego Bizancjum na przykładzie pism Orybazjusza*, [in:] *Leki i choroby odzwierzęce*, eds. L. W d o w i a k, B. P ł o n k a-S y r o k a, A. S y r o k a, vol. I, Wrocław 2016, p. 60–62.

[23] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 269, 16 – 270, 10, vol. XII.

[24] The physician does not, however, express it directly.

to regenerate tissue. The fresh ones, however, could also contribute to diaphoresis (which Galen shows using the example of *oksygaláktinos*), though only to a slight degree[25].

The physician devotes the largest part of the analysed text to illustrating the practical applications of both mature and fresh cheeses in medical procedures he once performed. The first case is somewhat anecdotal and is included presumably to underscore the doctor' s medical intuition. From his account, we learn that one day Galen received cow milk cheese that gave off an exceptionally intense smell. Having considered it unfit for consumption, he gave it to one of the slaves among his servants, who put the foodstuff in the pantry. After a longer period of time, the servant brought the cheese back to his master, asking him what he should do with it. Judging from the pungency of the foodstuff, the physician concluded that it was even more unfit for consumption. The story has it that, having made the judgement, Galen grabbed a mortar, put the cheese into it, and began to grind with a pestle, adding a decoction of boiled ham bones. Then, he applied the resultant mixture to the joints of an arthritic man, whose condition was so serious that he had to be carried on a stretcher into Galen's surgery. In almost no time he learnt that the medicament had proved to be exceptionally effective. The application of the medicament to the areas of skin above the affected organs facilitated the self-acting removal of hardenings from the joints, which had previously led to the patient being bed-ridden. According to the author's account, the man was also instructed how to prepare the aforementioned medication for personal use, and, in time, he began to share the formula with other people suffering from the same condition[26].

When writing about the therapeutic application of fresh cheese, Galen equally used retrospection. In his account, he indicated that fresh cheese is characterised by properties opposite to those typical of mature cheese. Therefore, he used it to heal large and open wounds, which – as he recollected – he had learnt while curing a certain peasant. We

[25] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 272, 5–8, vol. XII.

[26] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 270, 11 – 271, 13, vol. XII.

may only assume that this was still in Galen's youth, when he was acquiring his professional experience by helping residents in Asia Minor (mainly Mysia, where his hometown was located). The physician adds that, later on, he would regularly use compresses made up of grated fresh cheese, secured to the surface with dock leaves, as such medication was considered to induce cicatrisation of the wounds[27]. Galen argues that *oksygaláktinos* was exceptionally effective in such cases[28].

As can be learned from later medical treatises, early Byzantine cheese therapeutics was also grounded on ancient findings. Galen's successors simply quoted his disquisition, usually narrowing the range of information to the most crucial pieces of his cheese-oriented *materia medica*. This approach was taken, for instance, by Oribasius[29], who, on top of Galen's words from *De simplicium medicamentorum temperamentis ac facultatibus*, listed the uses of fresh cheese in his collective paragraphs devoted to grouping individual medical substance by their most distinguishing property[30]. On the other hand, Aëtius of Amida completely ignored any medical description of cheese, and restricted himself only to listing *oksygaláktinos* within the catalogue of moderately diaphoretic substances[31]. More details on fresh cheese can be found in the work by Paul of Aegina, who, in a short paragraph, repeated the most important information from Galen's treatise[32]. Similarly, the two anecdotes on the use of mature and fresh cheese in very effective

[27] Galen, *De simplicium medicamentorum temperamentis ac facultatibus*, 270, 13 – 272, 2, vol. XII.

[28] Galen, *De simplicium medicamentorum temperamentis ac facultatibus*, 272, 2–5, vol. XII.

[29] Oribasius, *Collectiones medicae*, XV, 2, 5, 1 – 8, 1.

[30] Oribasius, *Collectiones medicae*, XIV, 60, 1, 1 – 2, 49 (*oksygaláktinos* – XIV, 60, 2, 41–42); Oribasius, *Synopsis*, II, 50, 1, 1–18 (*oksygaláktinos* – II, 50, 1, 15–16); Oribasius, *Libri ad Eunapium*, II, 23, 1, 1–32 (*oksygaláktinos* – II, 23, 1, 26). Cf. Oribasius, *Collectiones medicae*, XIV, 10, 53, 1–2. On the ability to adhere, typical of fresh cheese and milk curd, cf. Oribasius, *Collectiones medicae*, XIV, 40, 6, 1–2.

[31] Aëtius of Amida, II, 235, 1–17 (cheese – II, 235, 15).

[32] Paul of Aegina, VII, 3, 19, 95–101.

medicaments made their way into Byzantine medical literature[33].

The Byzantine medical writers did not, however, focus exclusively on Galen's output but also borrowed a cornucopia of information from other sources. A couple of examples will suffice to prove this. For instance, Oribasius recommends a compress made from salted cheese to patients suffering from the stings of scorpions, venomous spiders, wasps or bees[34], while fresh cheese applied in the same manner was believed to be an effective medicament in the early therapy of the ailment called *hypópia* (i.e., black eyes)[35]. Paul of Aegina, in turn, warned patients with kidney stones against consuming any food that generates thick juices, e.g., cheese, milk and its derivatives, etc[36]. One can argue that, though neither the former nor the latter specify that these pieces of medical advice were borrowed from Galen's teachings, they are perfectly compatible with the doctrine he formulated.

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[33] Cataplasms made from old cheese in treating arthritis – Oribasius, *Synopsis*, IX, 58, 1, 1 – 4, 3 (formula – IX, 58, 1, 1 – 2, 6; cheese – IX, 58, 2, 1); Oribasius, *Libri ad Eunapium*, IV, 116, 1, 1–22 (formula – IV, 116, 12, 1 – 13, 1; cheese – IV, 116, 12, 1); Aëtius of Amida, II, 102, 1–10 (cheese – II, 102, 4; II, 102, 8). The same disease was also treated by means of another pharmaceutical agent, compiled from old cheese, ham, etc. – Oribasius, *Synopsis*, VII, 34, 1, 1 – 5, 1 (formula – VII, 34, 4, 1 – 5, 1; cheese – VII, 34, 4, 4–5); Paul of Aegina, VII, 17, 74, 1–5 (cheese – VII, 17, 74, 2–3). On both medicaments, cf. Z. Rzeźnicka, *Rola mięsa w diecie w okresie pomiędzy II a VII w. w świetle źródeł medycznych*, [in:] *Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II–VII w.)*, Część II, *Pokarm dla ciała i ducha*, ed. M. Kokoszko, Łódź 2014, p. 243–246. Compresses made from fresh cheese, applied to injuries – Oribasius, *Synopsis*, VII, 1, 1, 1 – 13, 4 (compress – VII, 1, 5, 4–6; cheese – VII, 1, 5, 4; VII, 1, 5, 5); Oribasius, *Libri ad Eunapium*, III, 13, 1, 1 – 11, 2 (compress – III, 13, 5, 4–6; cheese – III, 13, 5, 4; III, 13, 5, 6); Aëtius of Amida, II, 103, 1–7 (cheese – II, 103, 2; II, 103, 6); Paul of Aegina, IV, 37, 1, 1 – 2, 9 (compress – IV, 37, 1, 6–8; cheese – IV, 37, 1, 6–7).

[34] Oribasius, *Eclogae medicamentorum*, 119, 1, 1 – 7, 6 (list of cataplasms – 119, 2, 1 – 3, 1; cheese – 119, 2, 5).

[35] Oribasius, *Libri ad Eunapium*, IV, 50, 1, 1 – 3, 3 (quoted extract – IV, 50, 1, 1–2; cheese – IV, 50, 1, 1).

[36] Paul of Aegina, III, 45, 1, 1 – 3, 22 (diet – III, 45, 3, 4–11; cheese – III, 45, 3, 6).

Zofia Rzeźnicka, Maciej Kokoszko

3. Cheese in cuisine

Though, in all likelihood, cheese was important as a foodstuff, we have only a hazy picture of its role in gastronomy of antiquity and Byzantium. That is why, in order to make it clearer, it is advisable to consult sources whose period of composition goes beyond the general chronological framework of the present book.

According to Aristotle (4th c. BC), the milk of sheep and goats was more commonly used in cheesemaking than that of cows[37]. Though the philosopher gives no justification for this statement, his words can be better understood in the light of medical sources. In order to fully comprehend this gradation, one needs to take a closer look at the data regarding the properties of milk from various domestic animals, and especially the information provided by Galen. As has been already demonstrated in this book, Galen narrowed down the list of milk animals to pigs, goats, horses, cows, donkeys and sheep, at the same time indicating that donkey milk is not suitable for cheesemaking due to its thin consistency. What is more, Galen also described pig's milk as watery, which allows us to assume that it was also unfit for cheesemaking[38]. In order to systematise the remaining types of milk, we should order them by the amount of curd present in the liquid, i.e., by thickness. As a result, we learn that cow milk, in this respect, was considered the best, followed by the milk of sheep, goats and mares[39]. However, since the latter is listed by Galen immediately before donkey milk, we may assume that it was only sporadically used to make cheese[40]. On the other hand, the high

[37] A r i s t o t l e, 522 a, 25–28. It is worth emphasising, however, that – even if less popular – cow cheeses were still used in gastronomy, cf. A p i c i u s, IV, 1, 1; IV, 1, 3.

[38] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 265, 13 – 266, 2, vol. XII.

[39] G a l e n, *De alimentorum facultatibus*, 681, 14 – 682, 1, vol. VI.

[40] On the cheese made from mare's milk, cf. a later part of the text.

efficiency of cow milk in cheesemaking can be corroborated if we make another recourse to Aristotle, who maintained that cow milk is significantly more productive than the milk of goats[41].

What calls for an explanation is why cow milk cheese was considered by Aristotle as less common than that of sheep and goats, even though it was produced from milk characterised by the highest content of curd. To fully comprehend the issue, one must view it through the prism of the natural conditions which prevailed in the eastern parts of the Mediterranean world, where the prevailingly high-altitude pasturelands were inaccessible to cows. Whereas, this was not the case with sheep and goats, which could easily reach mountain clearings. What is more, the costs of breeding (low-maintenance) sheep and goats were incomparably lower than the expenses related to the husbandry of cows (requiring the construction of barns and the provision of appropriate fodder)[42]. Accordingly, in the Mediterranean, cows were generally fewer than sheep and goats and that is why the volume of cow milk for the purpose of producing cheese was on average lower than that of the former two species.

Following this line of reasoning, and, first and foremost, due to their lower fodder requirements, one may conclude that during the analysed period, it was goats that were the most commonly bred dairy livestock, and thus, goat milk cheeses were produced on the largest scale (an opinion expressed, for instance, by Andrew Dalby[43]). Nevertheless, it must also be borne in mind that even if the vast majority of farmers at that time kept goats (which give slightly more milk) rather than sheep, the milk of the latter contains more curd, which makes Dalby's conclusion

[41] According to Aristotle's account, nineteen cheeses (the worth of one obol) were produced from one amphora of goat milk, whereas the same amount of cow milk returned thirty units, cf. A r i s t o t l e, 522 a, 29–32. Modern practice shows that five litres of goat milk is enough to produce half a kilo of cheese (D. J a m r o z, B. N o w i c k i, *Kozy. Chów i hodowla*, Warszawa 1994, p. 110).

[42] Cf. Z. R z e ź n i c k a, *Rola mięsa...*, p. 258, 268.

[43] A. D a l b y, *Food...*, p. 160. On the domination of goat cheeses in ancient Greece, cf. W.H. K e u l e n, *Significant Names in Apuleius: A 'Good Contriver' and his Rival in the Cheese Trade ("Met." 1, 5) (Apuleiana Groningana X)*, Mn 53.3, 2000, p. 313; J.P. A l c o c k, *Food...*, p. 67.

only a supposition, since there is no specific data that would allow us to prove – beyond all doubt – the thesis on the higher production of goat milk cheese in comparison with that made from sheep milk[44]. Regardless of how this issue is settled, the milk of goats and sheep undoubtedly remained the most basic staple from which cheeses were made in antiquity. And this ratio did not undergo any changes into the early Middle Ages – as shown by analyses of later medical treatises[45].

The foregoing disquisition does not mean, however, that milk obtained from other animal species was not used in ancient and early Byzantine cheesemaking. From Pliny and Dioscorides[46], we learn, for instance, that the milk of mares was used to produce a cheese called *hippace*, which Oribasius describes as a foodstuff characterised by an intense smell and a nutritional value equal to cow milk cheese[47]. Furthermore, Aristotle claims that the so-called Phrygian cheese was made through a combination of the milk of mares and donkeys[48]. However, the remark is so brief that it makes it difficult to unequivocally conclude

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[44] To prove this thesis, we would need to know the ratio of the volume of milk curd produced from goat milk versus sheep milk, which would allow us to determine the final amounts of both types of cheese.

[45] Oribasius, *Collectiones medicae*, II, 59, 1, 1 – 2, 1; Aëtius of Amida, II, 87, 9–11. On the dominance of goat husbandry over sheep breeding in the Byzantine period, and thus, also on the primacy of cheese made from both types of milk, cf. Ch. Bourbou, M.P. Richards, *The Middle Byzantine Menu...*, p. 65; Ch. Bourbou, B.T. Fuller, S.J. Garvie-Lok, M.P. Richards, *Reconstructing...*, p. 570–571, 573–575; J. Koder, *Paratērēseis gia te chrēsē booeidōn sto Byzantio*, [in:] *Zōa...*, p. 38; idem, *Cuisine...*, p. 433.

[46] On the term in Pliny's and Dioscorides' writings cf. the chapter of the present book devoted to Dioscorides' theory on milk.

[47] Oribasius, *Collectiones medicae*, XII, tau, 23, 1–2. Cf. Hippocrates, 18, 18–20.

[48] Aristotle, 522 a, 28–29. Cf. M. Kokoszko, K. Gibel-Buszewska, *Termin kandaulos/kandylos (ΚΑΝΔΑΥΛΟΣ/ΚΑΝΔΥΛΟΣ) na podstawie Lexeōn Synagōgē Focjusza oraz Commentarii ad Homeri Iliadem Eustacjusza z Tessaloniki*, VP 30, 2010, p. 368, 370; iidem, *Kandaulos. The Testimony of Selected Sources*, SCer 1, 2011, p. 18, 20; iidem, *The Term Kandaulos/Kandylos in the Lexicon of Photius and the Commentarii ad Homeri Iliadem of Eustathius of Thessalonica*, BZ 104, 2011, p. 133, 138–139, 142.

whether this product was made exclusively from these two types of milk, or if they were used as an additive to the milks of sheep and goats, which were most probably even more popular in upland Phrygia.

Cheese was produced both for personal or household use and for trading (which also included long-distance export). The former option is discussed, for instance, by Longus (2nd c. AD), who mentions small round pieces of home-made cheese which were given as a gift[49]. There is no direct information on the type of milk they were made from but the text has a useful clue allowing a likely conclusion – according to Longus, the present came from a cowherd named Dorco (accordingly, in all probability, the cheese was obtained from cow milk)[50].

As for commerce, it cannot be denied that farms where large herds of animals were kept must have produced amounts of milk that exceeded their individual needs. Therefore, it comes as no surprise that whenever milk could not be sold immediately, Columella advised farmers to use the remainder for cheesemaking[51], this surplus, in turn, could be easily warehoused and then exported. This must have been a common practice in antiquity, since it is mentioned by both agronomical and medical writers. The author of *De re rustica* and Celsus wrote about the shipping of cheeses, implying that their production sites and the target markets were far away from each other[52]. We are able to comprehend how long these distances were from the accounts by Pliny, who in *Historia naturalis* refers to a cheese made in Bithynia, which was then transported (most likely) to the heart of the *Imperium Romanum*[53].

Accordingly, from the aforementioned source texts, we can surmise that from the early 1st c. AD, target markets for certain types of cheese had developed in a considerable number of areas (or perhaps even in the entirety) of the Mediterranean region. Such products were likely to be made based on uniform local recipes, and that is why they

[49] L o n g u s, I, 19, 1, 5.
[50] L o n g u s, I, 19, 1, 1 – 2, 5.
[51] C o l u m e l l a, VII, 8, 1.
[52] C o l u m e l l a, VII, 8, 6; C e l s u s, II, 30, 2.
[53] P l i n y, XI, 242, 1. We will return to the fragment later in the present text.

had their own *appellation d'origine*, as is signalled by Pliny with regard to, for instance, *caseus Luniensis*. We might not be familiar with the details of its manufacture, yet we can conjecture that the technology did not entirely correspond with methods used in other Mediterranean regions, since it was only in the vicinity of Luna that a unique method was used to form milk curd into blocks of a considerable size, whose exceptional weight (1000 pounds) was considered noteworthy by the encyclopaedist[54]. *Historia naturalis* is full of evidence which certifies the existence of other local cheesemaking techniques, listing regions famous for the most valued types of the foodstuff[55].

Knowing that cheeses had to be shipped, we may also assume that their purchase/selling price was relatively high, as it would have to cover not only the costs of transportation but also leave the merchants with a reasonable profit. The enterprise must have been financially rewarding since – as confirmed by Galen, who maintained that wealthy cheese aficionados were willing to pay a premium for the most expensive product as long as it was a recognised brand that guaranteed exceptional properties and quality[56]. Accordingly, we can also conclude that the trading of cheese within the Mediterranean basin was a fairly common practice in the first centuries AD[57].

In all likelihood, however, the origins of the phenomenon date back to much earlier times. We know, for instance, that in the 5th c. BC, there was a fair in Athens specialising in cheese trading (open on the last day of each month), which proves that, at that time, there was already a well-developed market for this dairy product[58]. Undoubtedly, imported goods were offered there, alongside local products. Although

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[54] P l i n y, XI, 241, 2–4. The cheese is also mentioned in poetry, for instance, by Martial (XIII, 30). Cf. T.J. L e a r y, *Martial Book XIII: The Xenia. Text with Introduction and Commentary*, London 2001, p. 80–81.

[55] P l i n y, XI, 240, 1 – 242, 1. We will return to the fragment later in the present text.

[56] G a l e n, *De alimentorum facultatibus*, 697, 15, vol. VI.

[57] A Greek cheesemonger was, for instance, portrayed by Apuleius in his *Metamorphoses*, cf. A p u l e i u s, I, 5, 1–19. On this subject, cf. W.H. K e u l e n, *Significant...*, p. 310–321.

[58] L y s i a s, 6, 7. Cf. A. D a l b y, *Cheese. A Global...*, p. 76; i d e m, *The Flavours of Classical...*, p. 22; J. P a u l a s, *Cheese...*, p. 1445.

we do not have information on similar cheese fairs in Rome, the author of *Historia naturalis* clearly states that there were numerous gourmets in the capital who had their favourite types of the foodstuff[59]. From the accounts by Pliny and Galen, we can conclude that one such cheese was *caseus Vatusicus*[60], imported from the *Alpes Ceutronicae*, more precisely, from what is today the region of Tarentaise in Savoy[61]. What is more, due to the efficiently managed trade exchange, cheese connoisseurs had access to delicacies produced in the majority of the famous cheese-making regions. Among Eastern Mediterranean products, the best-known ones included the aforementioned Phrygian cheese and the fresh and delicate *oksygaláktinos*[62] produced in Mysia. In Greece, the city of *Tromilea* was renowned for the best goat milk cheeses[63], while highly valued sheep milk cheeses came from the islands of *Ceos*[64] and Sicily, where the animals gave such thick milk[65] that it had to be diluted with the milk of goats[66]. Meanwhile, Martial (1st c. AD) writes about

[59] Pliny, XI, 240, 1–2. On the practice of importing cheese to Rome – R.I. Curtis, *Storage and Transport*, [in:] *A Companion...*, p. 173.

[60] Galen, *De alimentorum facultatibus*, 697, 15–16, vol. VI.

[61] Pliny, XI, 240, 4–5.

[62] Galen, *De alimentorum facultatibus*, 697, 10–11, vol. VI. In accordance with *Edictum de Pretiis Rerum Venalium*, a pound-mass (327 g) of this type of cheese (*caseus recens*) cost eight denarii, cf. *Edictum Diocletiani*, VI, 1, 96.

[63] Athenaeus of Naucratis, XIV, 658 b–c (76, 9–24; cheese – 76, 9; 76, 11–13; 76, 18–19).

[64] Claudius Aelianus, XVI, 32. Cf. S. Isager, J.E. Skydsgaard, *Ancient...*, p. 103.

[65] Sheep milk contains more dry mass in comparison to cow milk, cf. J. Wójtowski, *Użytkowanie mleczne z elementami przetwórstwa*, [in:] *Hodowla, chów i użytkowanie owiec*, ed. R. Niżniowski, Warszawa 2011, p. 182–183; S. Rasheed, I.M. Qazi, I. Ahmed, Y. Durrani, Z. Azmat, *Comparative Study of Cottage Cheese Prepared from Various Sources of Milk*, PPAS.LES 53.4, 2016, p. 271–272.

[66] As seen from Aristotle's text, this practice was also applied in other regions of the Mediterranean world (Aristotle, 522 a, 21–25). On Sicilian cheeses, cf. Aristophanes, *Vespae*, 838; *Scholia in Aristophanis vespas*, 838 b, 2; *Scholia in Aristophanis pacem*, 250 b, 1–2; Athenaeus of Naucratis, I, 27 d (49, 6); I, 27 f (49, 17); XIV, 658 a–b (76, 1–5; cheese – 76, 1; 76, 5). On the subject, cf. K. Bartol, J. Danielewicz, *Komedia grecka od Epicharma do Menandra. Wybór fragmentów*, Warszawa 2011, p. 124.

cheeses made in *Tolosa* (today's Toulouse)[67], in the district of Rome known as *Velabrum*[68], and in the Sabine city of *Trebula* (most likely today's Monteleone Sabino)[69].

Most details regarding ancient cheesemaking centres are provided by Pliny, who writes about a highly valued fresh cheese with a short expiry date which was made in Narbonne province, and more precisely in *Lesurae pagus* (close to Mont Lozère) and in *Gabalicus pagus* (today's Gévaudan). The mountainous areas of Dalmatia named *Alpes Delmaticae* (today's Velika Kapela) were famous for their Doclean cheese (*caseus Docleas*), *Alpes Ceutronicae* (located near the Little St Bernard Pass, on today's border of France and Italy) for the aforementioned *caseus Vatusicus*, Liguria for *caseus Cebanus*, which was made from sheep milk and owed its name to the city of *Ceba* (today's Ceva), and in Umbria, near the town of *Sarsina/Sassina* (today's Sarsina), the locals made a cheese named after the town itself. The aforementioned Lunean cheese was produced in the vicinity of today's Luna, on the border with Liguria and Etruria[70]. There was also Vestinian[71] cheese, made near Rome, the best of which – according to Pliny – was from *campus Caedicius*[72]. The passage discussed above suggests that the transportation of some types of cheese must have been already well organised and, therefore, fast, a conclusion that stems from the fact that Rome even had access to fresh Gallic products (for instance, from the Narbonne province), which were known for their short expiry date. They may

[67] Cheeses produced there were pressed in square moulds, cf. M a r t i a l, XII, 32, 18.

[68] These cheeses were smoked, cf. M a r t i a l, XI, 52, 10; XIII, 32. Cf. J.P. A l c o c k, *Milk...*, p. 37; T.J. L e a r y, *Martial Book XIII...*, p. 82–83.

[69] M a r t i a l, XIII, 33. Cf. J.P. A l c o c k, *Milk...*, p. 37; T.J. L e a r y, *Martial Book XIII...*, p. 83–84.

[70] P l i n y, XI, 240, 2 – 241, 3. Cf. M. T o u s s a i n t-S a m a t, *Histoire...*, p. 151.

[71] Cf. M a r t i a l, XIII, 31; A p i c i u s, IV, 1, 2. On this cheese, cf. T.J. L e a r y, *Martial Book XIII...*, p. 81–82.

[72] P l i n y, XI, 241, 4–5. On the regions of the Mediterranean world famous for cheesemaking – A. D a l b y, *Siren Feasts...*, p. 136; A. D a l b y, *Empire of Pleasures. Luxury and Indulgence in the Roman World*, London–New York 2002, p. 58, 62, 68, 70, 75, 81, 91, 114, 141, 213, 253; Ch. C h a n d e z o n, *Animals...*, p. 137; M. G o b b e t t i, E. N e v i a n i, P. F o x, *The Cheeses of Italy: Science and Technology*, Cham 2018, p. 14, 27.

have been shipped, although we cannot rule out the existence of inland trade routes. Logically, some types of cheese must have been transported over land, e.g., the products from Umbria, or Vestinian cheeses made in the vicinity of Rome.

Cheese trading continued in the Middle Ages[73]. On the basis of the preserved sources, we can state that in the times of Byzantium, the most valued were Vlach (*vláchos*, plural: *vláchoi*), Cretan and Paphlagonian cheeses[74]. Brief remarks on the first two can be found, for instance, in the poetry of Ptochoprodromos (12th c. AD), who – in one of his works – recounts that the Cretan cheese was imported to Constantinople by the Venetians[75]. In his interpretation of the narrative, Johannes Koder

[73] Cheese on the Constantinopolitan market, cf. *Liber praefecti*, 13, 1.

[74] Cf. A. K a r p o z i l o s, *Realia in Byzantine Epistolography X–XII c.*, BZ 77.1, 1984, p. 25–26. It is worth mentioning that cheesemaking tradition in Crete presumably dates back to the 5th c. BC (cf. A. D a l b y, R. D a l b y, *Gifts...*, p. 18–19). According to David Jacoby, between the 13th and 15th c. AD, Cretan cheeses were delivered to Constantinople. The scholar also believes that in the 14th c. AD, cheeses from Apulia and Sicily appeared on the Constantinopolitan market. During the same century, the residents of the capital city could also purchase hard ripening cheese of an unknown origin known as 'Muslim', and a kashar-like cheese from Crete (D. J a c o b y, *Mediterranean Food and Wine for Constantinople: The Long-Distance Trade, Eleventh to Mid-Fifteenth Century*, [in:] *Handelsgüter und Verkehrswege. Aspekte der Warenversorgung im östlichen Mittelmeerraum (4. bis 15. Jahrhundert). Akten des Internationalen Symposions Wien, 19.–22. Oktober 2005*, eds. E. K i s l i n g e r, J. K o d e r, A. K ü l z e r, Wien 2010, p. 128–129).

[75] P t o c h o p r o d r o m o s, IV, 121–122. On the export of Cretan cheese to Constantinople and other regions of the Mediterranean basin, cf. D. J a c o b y, *Cretan Cheese: A Neglected Aspect of Venetian Medieval Trade*, [in:] *Medieval and Renaissance Venice*, eds. E.E. K i t t e l, T.F. M a d d e n, Urbana–Chicago 1999, p. 49–68; H. K a l l i g a s, *Monemvasia, Seventh-Fifteenth Centuries*, [in:] *The Economic History of Byzantium. From the Seventh through the Fifteenth Century*, ed. A.E. L a i o u, vol. I–III, Washington 2002, p. 893; A.E. L a i o u, *Exchange and Trade, Seventh-Twelfth Centuries*, [in:] *The Economic...*, p. 748–749; C. M o r r i s s o n, J.-C. C h e y n e t, *Prices and Wages in the Byzantine World*, [in:] *The Economic...*, p. 842; D. J a c o b y, *Venetian Commercial Expansion in the Eastern Mediterranean, 8th–11th Centuries*, [in:] *Byzantine Trade, 4th–12th Centuries. The Archaeology of Local, Regional and International Exchange. Papers of the Thirty-Eighth Spring Symposium of Byzantine Studies, St John's College, University of Oxford, March 2004*, ed. M.M. M a n g o, Aldershot 2009, p. 377–378, 384; i d e m, *The Venetians in Byzantine and Lusignan Cyprus: Trade, Settlement, and Politics*, [in:] *Ē galēnotatē kai ē eugenestatē. Ē Benetia stēn Kypro kai ē Kypro stēn Benetia. La serenissima and la nobilissima. Venice in Cyprus and Cyprus in Venice*, ed. A. N i c o l a u-K o n n a r i,

concludes that the cheese was characterised by a sharp taste that irritated the throat, and thus it was unsuitable to be eaten with bread (though it did constitute a component of multi-ingredient dishes)[76]. On the basis of the source text it is difficult to pinpoint the reason for this sensation, but it can, in all likelihood, be assumed that it was caused by salt permeating the cheese from the brine in which it was stored, as suggested by Andrew Dalby[77]. What is more, the English scholar contrasts this foodstuff with the *vláchos* cheese (which was also mentioned in the analysed Greek text[78] and was most likely made from sheep milk, since Vlachs would primarily pasture this species of animals[79]). Thus, from the registry provided by the aforementioned researcher, we may conclude that this second type of cheese was not stored in brine and, in all probability, used to be delivered to Constantinople as a relatively fresh product. Although it is virtually impossible to find evidence to prove this thesis, an argument which speaks in its favour is the fact that in the

Nicosia 2009, p. 66, 68; M.M. M a n g o, *Byzantine Trade: Local, Regional, Interregional and International*, [in:] *Byzantine Trade...*, p. 14; D. J a c o b y, *Mediterranean Food...*, p. 128–129, 136, 145–146; i d e m, *Thirteenth-Century Commercial Exchange in the Aegean: Continuity and Change*, [in:] *Change in the Byzantine World in the Twelfth and Thirteenth Centuries. First International Sevgi Gönül Byzantine Studies Symposium, 25–28 June, 2007*, eds. A. Ö d e k a n, E. A k y ü r e k, N. N e c i p o ğ l u, Istanbul 2010, p. 190; i d e m, *Commercio e navigazione degli Amalfitani nel Mediterraneo Orientale: sviluppo e declino*, [in:] *Interscambi socio-culturali ed economici fra le città marinare d'Italia e l'Occidente dagli osservatorî mediterranei. Atti del Convegno Internazionale di Studi in memoria di Ezio Falcone (1938–2011). Amalfi, 14–16 Maggio 2011*, eds. B. F i g l i o u l o, P.F. S i m b u l a, Amalfi 2014, p. 100–101; i d e m, *The Byzantine Social Elite and the Market Economy, Eleventh to Mid-Fifteenth Century*, [in:] *Essays in Renaissance Thought and Letters. In Honour of John Monfasani*, eds. A. F r a z i e r, P. N o l d, Leiden–Boston 2015, p. 71, 74; M. G e r o l y m a t o u, *Tyrin krētikon, tyrin tourkikon, tyrin apo Benetias. Concerning the Cheese Trade in the 14th Century*, [in:] *Latte e latticini...*, p. 173–184; M. G o b b e t t i, E. N e v i a n i, P. F o x, *The Cheeses of Italy...*, p. 29.

[76] J. K o d e r, *Everyday Food...*, p. 145. The extract interpreted by Johannes Koder, cf. P t o c h o p r o d r o m o s, IV, 110. This cheese is listed, for instance, as one of the ingredients of the dish known as *monókythron*. On the dish cf. further part of this text.

[77] A. D a l b y, *Cheese. A Global...*, p. 101.

[78] P t o c h o p r o d r o m o s, III, 118.

[79] J. L e f o r t, *The Rural Economy, Seventh-Twelfth Centuries*, [in:] *The Economic...*, p. 265.

times of Ptochoprodromos, Vlachs lived, *inter alia*, in the territory of today's Macedonia[80], i.e., a comparatively short distance from the capital, which allowed a relatively swift delivery of this cheese to the recipients in Rome. More information which leads us to conclude that the 'Vlach cheese' brand was associated with being a fresh product is the fact that it was also sold to monks from Mount Athos, where it could be delivered almost immediately after its production. Most probably, it was exactly this line of reasoning that was followed by Anthony Bryer, when he called the said foodstuff 'white'[81]. What we can also assume is that Vlach dairy was offered at more affordable prices than Cretan cheese[82], since the Vlachs lived closer to the borders of the Empire, and the delivery was conducted without intermediary agents (such as the Venetians in the case of Cretan cheese).

During the Byzantine period, Paphlagonia was another famous cheesemaking region. Interestingly, its cheeses were highly popular not only among wealthy gourmets, but also in medical circles. Presumably, these foodstuffs owed their exceptional nature to the local method of production, which is mentioned by Michael Psellos (11th c. AD) in one of his letters[83]. According to his account, Paphlagonian shepherds applied a technology which allowed them to obtain a tasty and valued

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[80] I. C z a m a ń s k a, *Vlachs and Slavs in the Middle Ages and Modern Era*, RHis 41, 2016, p. 12.

[81] A. B r y e r, *The Means of Agricultural Production: Muscle and Tools*, [in:] *The Economic...*, p. 103.

[82] D. J a c o b y, *Venetian Commercial Expansion...*, p. 377; J. K o d e r, *Everyday Food...*, p. 145. However, Vlach cheese must have still been expensive, since it is mentioned by Chryssi Bourbou as a luxurious foodstuff, cf. Ch. B o u r b o u, *Are We What We Eat? Reconstructing Dietary Patterns of Greek Byzantine Populations (7th–13th Centuries AD) Through a Multi-Disciliplinary Approach*, [in:] *Diet, Economy and Society in the Ancient Greek World. Towards a Better Integration of Archaeology and Science. Proceedings of the International Conference Held at the Netherlands Institute at Athens on 22–24 March 2010*, eds. S. V o u t s a k i, S.M. V a l a m o t i, Leuven–Paris–Walpole, Mass. 2013, p. 217.

[83] On the subject – I. A n a g n o s t a k i s, *Les trous dans le fromage: la description de Michel Psellos et la recherche contemporaine*, [in:] *Latte e latticini...*, p. 129–146; C. A n g e l i d i, I. A n a g n o s t a k i s, *La concezione...*, p. 152, 154–155; C. M e s s i s, *Au pays des merveilles alimentaires: invitation à la table paphlagonienne*, [in:] *Latte e latticini...*, p. 164–171.

cheese characterised by holes. The uniqueness of the technique lay in the somewhat imprecise separation of the whey from the milk curd (which was not exposed to thorough mechanical draining through squeezing)[84]. Additionally, the content of Psellos' letter demonstrates that the author possessed at least a rudimentary knowledge of cheese-making. First of all, he correctly distinguished between the various constituents of milk. Secondly, he was well aware that the milk curd later used to produce cheese, can be obtained either by the spontaneous coagulation of milk or by adding appropriate ingredients. Finally, he also indicated that the physical properties of cheese depended on the applied method of milk curd processing, explaining that the less thick it was, the more likely one was to produce a cheese with holes, which, as Psellos put it, were the effect of gases emitted in the process of maturing. One can even conjecture that the aforementioned text reveals Psellos' familiarity with medical literature, as is suggested by the fact that, using appropriate terminology, he alluded to the non-uniform composition of milk as a substance. Another telling clue is his professional remark on the carminative nature of milk. Moreover, the analysed letter is not the only text in which Psellos demonstrated this type of competence[85].

His account also enables us to add some more details to the already cited catalogue of data on Paphlagonian cheese. Thus, we can conclude that the food was not consumed immediately after the separation of the whey, but was exposed to the process of dry ageing, which is when its characteristic holes were formed. Most likely, its final characteristics were achieved by the optimum conditions being maintained within ripening chambers. Even though the scholar does not refer directly to their layout and equipment, it seems that the conditions inside must have been of low humidity so that the formed milk curd would lose excess whey through evaporation (as is *expressis verbis* emphasised by

[84] P s e l l o s, *Epistulae*, 206. Cf. I. A n a g n o s t a k i s, *Byzantine...*, p. 86–87.

[85] P s e l l o s, *Epistulae*, 9, 7–8; P s e l l o s, *Poemata*, 208–210. On Psellos' interest in medicine, cf. R. V o l k, *Der medizinische Inhalt der Schriften des Michael Psellos*, München 1990, *passim*; A.R. L i t t l e w o o d, *Imagery in the Chronographia of Michael Psellos*, [in:] *Reading Michael Psellos*, eds. Ch. B a r b e r, D. J e n k i n s, Leiden–Boston 2006, p. 34–38.

Psellos). Naturally, the cheese could not have been stored outdoors; nor could the temperature indoors have been too high, as it would have made the cheese dry rapidly, which, in turn, would have obstructed the internal production of gasses in the cheese responsible for the formation of the holes. The foodstuff could not have been kept in brine either, since the cheese would not have lost any moisture, preventing the aforementioned process completely. One can further conclude that Psellos' epistolography proves that the inhabitants of the Mediterranean region in the 11th c. AD still, exactly as they did in antiquity, associated particularly valued types of cheese with the places where they were produced, which was often reflected in their names. Therefore, the term 'Paphlagonian cheese' is yet another typical example of an *appellation d'origine*, which would refer to a precisely identified brand, distinguished by particular recipes consistently followed in a given region[86]. Incidentally, the analysed letter reveals that Psellos was well aware of this phenomenon.

Even more details on the appearance, composition and popularity of the analysed cheese are provided by Symeon Seth (11th c. AD) in his treatise *Syntagma de alimentorum facultatibus*[87], who – just like ancient and Byzantine physicians – focuses primarily on determining its dietetic properties. He describes it as spongy, porous and pleasant in taste. What we also discover from his account is that it was classified neither as quark nor as a long ripening cheese (i.e., thick and hard). The term *eriómenos* that Symeon Seth uses to refer to Paphlagonian cheese also proves the already emphasised presence of holes in it, which made the foodstuff 'spongy' in two meanings of the word, i.e., it was both full of openings

[86] Cf. D. J a c o b y, *Mediterranean Food...*, p. 128–129.

[87] On the author, cf. J. N i e h o f f-P a n a g i o t i d i s, *Seth, Symeon*, [in:] *Antike Medizin. Ein Lexikon*, ed. K.-H. L e v e n, München 2005, cols. 799–800. Petros Bouras-Vallianatos confirms that, in his description of dietetic properties of foodstuff, Symeon Seth referred to Galen's findings, however, the researcher noted two cases where the Byzantine author questions Galen's opinions in this field, cf. P. B o u r a s--V a l l i a n a t o s, *Galen's Reception in Byzantium: Symeon Seth and his Refutation of Gallenic Theories on Human Physiology*, GRBS 55.2, 2015, p. 443; i d e m, *Galen in Byzantine Medical Literature*, [in:] *Brill's Companion to the Reception of Galen*, eds. P. B o u r a s-V a l l i a n a t o s, B. Z i p s e r, Leiden–Boston 2019, p. 98–99.

and springy, meaning it was neither hard nor dry enough to be easily crumbled. This conclusion is additionally corroborated by the fact that the description is in stark contrast to Symeon's characteristics of mature cheese, which – having lost all its moisture – would become brittle, and also harmful from the dietetic perspective. As a result, one can argue that Paphlagonian cheese, though firm on the outside, was fairly moist inside. Undoubtedly, the foodstuff was also characterised by a low salt content; otherwise, it would not have been recommended by the author. This supposition is also grounded in the fact that Psellos never mentioned this product to be particularly salty in taste. To conclude, all the aforementioned properties and values made this foodstuff practically harmless from the dietetic point of view, and it allowed Symeon Seth to recommend it even if the prevailing doctrine of his time still recognised the consumption of large amounts of cheese as damaging to the body[88]. Neither can one escape the conclusion that the content of Symeon's chapter on cheese is a perfect illustration of how persistent the dietetic doctrines of early antiquity were in Byzantine medicine, and thus, it also specifically proves that scholars in the Middle Byzantine period derived their knowledge from the output of ancient medicine. The recipients of such theories were found among the social elite (as indicated by Psellos' competence in the field) and even at the imperial court, since the author of the treatise evidently expected to interest emperor Michael VII Doukas (11th c. AD) with his disquisitions[89]. Last but not least, Symeon would have never included Paphlagonian cheese in his study of dietetics, had it not been popular enough to make himself deviate from tradition.

The already presented data can be complemented with information regarding cheesemaking technologies, as preserved in ancient and Byzantine agronomical source texts[90] and with yet another recourse to medical writings. According to the accounts provided by Roman

[88] Symeon Seth, 104, 12 – 105, 25.

[89] Symeon Seth, 18, 3.

[90] Columella, VII, 8, 1–7; Varro, *De re rustica*, II, 11, 3–4; Palladius, VI, 9, 1–3; *Geoponica*, XVIII, 19, 1–8. On cheesemaking, cf. D.L. Thurmond, *A Handbook of Food Processing in Classical Rome. For her Bounty no Winter*, Leiden–Boston 2006, p. 193–207; M. Gobbetti, E. Neviani, P. Fox, *The Cheeses of Italy...*, p. 4–6.

agronomists cheeses were made mainly in spring and early summer[91]. As we can surmise, this pattern was conditioned by the abundance of fresh grass, stimulating animals to produce large amounts of milk. The resulting surplus of milk led to the necessity to process it for curdling. Columella reports that the tastiest cheeses are those prepared with a minimum amount of animal rennet[92], and the most valued are made from milk coagulated by means of fig sap. On the other hand, medical texts inform us that the addition of coagulants was not always necessary, since milk curd could be obtained exclusively by heat processing, when a vessel with milk was placed over hot coals[93]. In *De alimentorum facultatibus*, we can read that Greek comic playwrights called this type of fresh cheese *pyriáte*, and in Asia Minor (in the second half of the 2nd c. AD) it was known as *pyríefthon*[94].

From Columella's narrative, we are unable to determine whether he himself applied the heat-induced method of obtaining milk curd. We are capable, however, of being certain that he was aware that high temperature facilitates the separation of curd from whey because, in order to accelerate the process (regardless of the coagulant used to curdle the milk), he advised the reader to put a pail with milk near the fireplace. Next, he recommended putting the obtained substance into small wicker baskets or wooden moulds for the whey to drain away, and then to form it into

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[91] V a r r o (*De re rustica*, II, 11, 4) explains that the best time is the period from the rising of the spring Pleiades to the summer ones (7th May to mid-June). According to Palladius (4th/5th c. AD), it should take place in May and June (P a l l a d i u s, VI, 9, 1; VII, 6), whereas Columella points out that milk obtained in summer contains a relatively small amount of whey, cf. C o l u m e l l a, XII, 10, 1 (recommended season of the year); XII, 13, 1 (cheesemaking).

[92] As an appropriate dose, he recommends an amount of rennet equalling the weight of one silver denarius (3.41 g) per milk-pail, cf. C o l u m e l l a, VII, 8, 2. Varro claims that for two vats of milk, the amount of rennet should be the size of an olive, cf. V a r r o, *De re rustica*, II, 11, 4.

[93] On the methods of coagulating milk in antiquity, cf. A. D a l b y, *Cheese. A Global...*, p. 71.

[94] G a l e n, *De alimentorum facultatibus*, 694, 14–17, vol. VI. On the subject, cf. appendix included in the present publication.

the required shape[95]. Once the cheese became satisfactorily solid, it was sprinkled with powdered salt and subsequently stored in a cool and shaded place. The moment it had hardened enough, it would be squeezed, rubbed with salt and weighted down. After nine days, the cheese was washed with fresh water and left to dry (with its separate portions never touching one another) in an airy place. Later, to prevent excessive hardening, it would be arranged on shelves in a closed room, unexposed to draughts. As seen from the analysed extract, meticulously following Columella's recommendations made it possible to produce a good cheese, i.e., a product which, in time, would become neither porous nor excessively salty or desiccated[96]. What is more, the product was so effectively preserved that it could easily be shipped.

In the quoted chapter from *De re rustica*, we can also find an extract on the preparation of a fresh and delicate cheese. According to the author's recommendations, the quark was to be removed from the small baskets, salted or immersed in brine, and then dried in the sun. Additionally, the author mentions the possibility of enriching its flavour by mixing milk with ground and sieved thyme or other selected herbs[97]. Such fresh cheese was known as *chlorós tyrós* in Greek, which means 'green cheese'. This term should not, however, be understood literally, since the analysis of the collected material proves that the epithet 'green' did not refer to its colour, but it was more likely a metaphor for food which is not fully mature (analogical to unripe green fruit). The term was popular with ancient Greek authors, who used it quite frequently without providing a more specific definition[98]. We are, however, positive of the meaning due to lexicographical writings. For instance, the author of the scholia to Aristophanes' *Ranae*, when explaining the term *tálaros*, indicated that it

[95] At times, the whey was removed and the cheese, which had gained the appropriate hardness, was weighted down (C o l u m e l l a, VII, 8, 4).

[96] Cheese becomes porous if it was insufficiently squeezed; too salty when too much salt was rubbed into it; too dry if it was exposed to sunlight (C o l u m e l l a, VII, 8, 5).

[97] C o l u m e l l a, VII, 8, 1–7. Analogical information, cf. P a l l a d i u s, VI, 9, 1–3.

[98] Source references to *tyrós chlorós*, cf. A r i s t o p h a n e s, *Ranae*, 559; A t h e n a e u s o f N a u c r a t i s, IV, 139 a (16, 22); VIII, 331 e (3, 18); IX, 402 e (66, 30); XII, 516 e, (12, 28).

was a wicker basket in which *chlorós tyrós* was placed to drain the whey[99]. Another precise indication can be found in *Lexicon* by Hesychius of Alexandria (6th c. AD)[100], who construes the term as *hapalós* (*tyrós*), i.e., delicate (cheese), which to the ancient Greeks was always a synonym of a fresh foodstuff of this kind[101].

To conclude, lets us systematize the information on cheeses. From a dietetic point of view, it was most advisable to consume fresh, soft and delicate varieties, as opposed to salt-preserved and ripened cheeses, whose hardness and aroma greatly depended on the length of maturation, as it intensified both properties[102]. Thus, depending on the level of maturity, cheeses were divided into soft and hard, thick or thin textured, sticky or prone to crumbling. As for flavours, they were categorised as piquant and salty, spicy, and with a note of sweetness. They could also be differentiated by the amount of fat[103]. Rennet-free cheeses were milder. On the other hand, cheese flavour could be intensified by coagulating the milk by means of a variety of rennets, for instance, by using fig-tree sap[104]. A change in aroma could also be achieved with the addition of herbs, or by smoking[105], where the latter method would also make the

[99] *Scholia in Aristophanis ranas*, 560, 1–3 (*tyrós chlorós* – 560, 3). Cf. Columella, VII, 8, 4.

[100] Cf. the appendix included in the present publication.

[101] Hesychius of Alexandria, khi, 554, 1 (s.v. *chlōron tyron*). Modern interpretations of this term, cf. A. Dalby, *Siren Feasts...*, p. 66; idem, *Cheese. A Global...*, p. 76–77, 120.

[102] The properties of fodder could be another factor intensifying the saltiness of cheeses, which Pliny illustrates with the example of Bithynian cheeses. He explains that the salt contained in the fodder influenced the taste of milk and, consequently, the cheese, cf. Pliny, XI, 242, 1–2.

[103] Galen, *De alimentorum facultatibus*, 698, 7–11, vol. VI. Cf. Oribasius, *Collectiones medicae*, II, 59, 11, 1 – 14, 5; Aëtius of Amida, II, 101, 18–23. On the salty taste of mature cheeses, cf. Pliny, XI, 242, 2–3. From the account of Pliny, who – when discussing the taste of goat cheeses from Gaul – uses the term *sapor medicamenti*, we can conclude that they were long-maturing cheeses with an intense taste (and aroma), like the ones used in ancient and Byzantine medicine, cf. Pliny, XI, 241, 8.

[104] Cf. Athenaeus of Naucratis, XIV, 658 c (76, 20–22).

[105] Columella writes about cheeses smoked in the fumes of apple tree or straw (Columella, VII, 8, 7). On smoked cheeses, cf. Pliny, XI, 241, 6–8; *Geoponica*, XVIII, 19, 7.

final product more durable[106]. From the extant source texts, we also learn about the sizes and appearance of cheese, which could take the form of relatively large blocks[107] or smaller portions[108] in various shapes, e.g., elongated, spherical[109], conical, or resembling a pine cone[110]. Depending on the consistency, specific needs and the cook's imagination, the cheeses could be used to sprinkle over dishes (crumbled) or served in the form of thin flakes (scraped) or thicker slices[111].

Extant ancient texts contain a range of information on the strictly culinary application of cheese. They usually imply that it was especially consumed with bread (i.e., as *ópson*)[112]. For instance, Galen and Oribasius report the practice of eating fresh and still warm bread with freshly produced *oksygaláktinos*[113].

Cheese, however, could also be used in multi-ingredient recipes, according to which, for instance, relishes were produced. A cheese-based paste is described, for instance, in *Moretum* included by Macrobius (5th c. AD) in his *Saturnalia*[114]. From the recipe preserved in

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[106] On methods to extend (or to restore) the freshness of cheeses, cf. P l i n y, XI, 242, 2–4; *Geoponica*, XVIII, 19, 5–8.

[107] P l i n y, XI, 241, 3–4. Such a cheese was most probably sold by unit or by weight. The latter is reported by Aristophanes (*Ranae*, 1369). Also cf. *Scholia in Aristophanis ranas*, 1369, 1–3; *Suda*, tau, 1199, 1–2 (s.v. *tyropōlēsō*).

[108] L o n g u s, I, 19, 1, 5. On the subject, cf. A. D a l b y, *Food...*, p. 81.

[109] *Moretum*, 115. The general term *trofalís* was often used in reference to oval or spherical pieces of cheese, cf. P o l l u x, VI, 48. The author of the scholia to Aristophanes' *Vespae* explains that this term stood both for elongated (discussed by Martial) and round (mentioned by the author of *Moretum*) pats of cheese, cf. *Scholia in Aristophanis vespas*, 838 b, 1.

[110] Cf. M a r t i a l, I, 43, 7; III, 58, 35. Special moulds may have been used for this purpose.

[111] A t h e n a e u s o f N a u c r a t i s, IX, 402 e (66, 31–32).

[112] On *ópson*, cf. J. D a v i d s o n, *Opsophagia: Revolutionary Eating at Athens*, [in:] *Food...*, p. 204–213.

[113] G a l e n, *De alimentorum facultatibus*, 518, 4 – 519, 2, vol. VI; O r i b a s i u s, *Collectiones medicae*, I, 13, 2, 5 – 4, 1. The applied translation was taken from a lecture preserved within Galen's output, cf. *De alimentorum facultatibus*, 518, 12–14, vol. VI. Cheese as *ópson*, cf. P l a t o, 372 c, 4–6 (cheese – 372 c, 5). On the subject, cf. A. D a l b y, *Siren Feasts...*, p. 22, 24; J.M. W i l k i n s, S. H i l l, *Food...*, p. 195.

[114] The work was penned by a certain Sueius. Cf. M a c r o b i u s, III, 18, 11–12.

Appendix Vergiliana we learn that such a delicacy was prepared in a mortar by grinding cheese seasoned with garlic, salt, parsley, rue and coriander. The addition of olive oil and wine vinegar would turn the pulp into a paste which could be hand-formed[115]. As for the *moretum* recipe itself, we know that it had a variety of versions, while extant information allows us to conclude that in each of them cheese, wine vinegar (occasionally aromatised with pepper) and olive oil were used as a base, which – at the cook's discretion – could be seasoned with various (fresh or dried) herbs[116], green vegetables[117], nuts[118], roasted sesame seeds[119], and sometimes even fruit, e.g., peaches[120].

Another complex delicacy with cheese was a sauce known as *hypótrimma*. It was an addition going well with bread but also with meat and vegetable. In the account by the author of *De re coquinaria*, the delicacy was made by mixing pepper, lovage, dried mint, pine nuts, dates, unsalted cheese, honey, wine vinegar, fish sauce and boiled wine must (*defritum* or *caroenum*)[121]. We know that cheese was an ingredient of the so-called *myttotón*, which (comes from an extract within Oribasius' treatise) was a variety of *hypótrimma*[122]. It was also included in *sala cattabia*, which we can identify as being similar to a modern salad (made, for

[115] *Moretum*, 92–118. This dish is also mentioned by O v i d (IV, 367–372). On the dish, cf. M. T o u s s a i n t-S a m a t, *Histoire...*, p. 151; S. H i l l, A. B r y e r, *Byzantine Porridge Tracta, Trachanás and Trahana*, [in:] *Food...*, p. 48; C.A. D é r y, *Milk...*, p. 119–120; A. D a l b y, *Food...*, p. 81; J.P. A l c o c k, *Food...*, p. 169.

[116] These were, for instance, savory, mint, rue, coriander, thyme, and oregano – C o l u m e l l a, XII, 59, 1; XII, 59, 4.

[117] These were, for instance, celery, leek, onion, lettuce, and rocket – C o l u m e l l a, XII, 59, 1.

[118] These could be common walnuts, pine nuts, hazelnuts or almonds – C o l u m e l l a, XII, 59, 2–3.

[119] C o l u m e l l a, XII, 59, 2.

[120] M a c r o b i u s, III, 18, 11. On the additives to *moretum*, cf. A p i c i u s, I, 35. A contemporised version of the recipe – P. F a a s, *Around...*, p. 170–171.

[121] A p i c i u s, I, 33. A contemporised version of the recipe, cf. P. F a a s, *Around...*, p. 171–172; S. G r a i n g e r, *Cooking Apicius. Roman Recipes for Today*, Blackawton–Totnes 2006, p. 55.

[122] O r i b a s i u s, *Collectiones medicae*, IV, 2, 14, 1–3. On *myttotón/myttotós*, cf. A. D a l b y, *Siren Feasts...*, p. 107.

instance, from [cow milk[123] or *Vestinus*[124]] cheese, soaked breadcrumbs, chicken meat [or livers], pine nuts and cucumbers, and seasoned with a spicy-sweet dressing[125]).

From the studied source texts, we also learn that cheese could be boiled[126], fried[127] or baked[128]. The first method profited from heat processing in a lavish dish called a *kándaulos*, which possibly dates back to the 7th c. BC[129]. A similar technology is mentioned by Cato (3rd/2nd c. BC)[130] in his *De agri cultura* in a recipe for *sui generis* cheesecake, which in Latin was referred to as *erneum*. Its crust and topping were made from wheat pastry sandwiched alternately by a cheese and honey mass[131] and *tracta*. Once all the layers had been put together, the whole cake was steamed in a water bath[132].

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[123] A p i c i u s, IV, 1, 1; IV, 1, 3.

[124] A p i c i u s, IV, 1, 2.

[125] The dressing was prepared from, for instance, celery seeds, dried mint, ginger, fresh coriander, raisins, honey, vinegar, olive oil, and wine, cf. A p i c i u s, IV, 1, 2. Recipes for *sala cattabia*, cf. A p i c i u s, IV, 1, 1–3. On the dish, cf. R. L a u r e n c e, *Roman Passions. A History of Pleasure in Imperial Rome*, London 2010, p. 107.

[126] O r i b a s i u s, *Libri ad Eunapium*, I, 35, 7, 5; A ë t i u s o f A m i d a, II, 101, 23; II, 255, 18; A n t h i m u s, 81.

[127] D i o s c o r i d e s, II, 71, 1, 4–5.

[128] O r i b a s i u s, *Collectiones medicae*, IV, 3, 6, 1 – 7, 1; A n t h i m u s, 81.

[129] Cheese as an ingredient of *kándaulos* – A t h e n a e u s o f N a u c r a t i s, XII, 516 d–e (12, 8–22; cheese – 12, 13). On the subject, cf. J.M. W i l k i n s, S. H i l l, *Food...*, p. 278; M. K o k o s z k o, K. G i b e l-B u s z e w s k a, *Termin kandaulos/kandylos...*, p. 368, 370; i i d e m, *The Term Kandaulos/Kandylos...*, p. 133, 137–139, 142–143; i i d e m, *Kandaulos. The Testimony...*, p. 13–14, 18, 20.

[130] On the author, cf. I. M i k o ł a j c z y k, *Rzymska literatura agronomiczna*, Toruń 2004, p. 26–51; Ph. T h i b o d e a u, *M. Porcius Cato of Tusculum (185 – 149 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists. The Greek Tradition and its Many Heirs*, eds. P.T. K e y s e r, G. I r b y-M a s s i e, London–New York 2008, p. 686–688; B. R e a y, *Agriculture, Writing, and Cato's Aristocratic Self-Fashioning*, CA 24.2, 2005, p. 331–361. On Cato' interest in health and wellbeing, cf. J. D r a y c o t t, *Roman Domestic Medical Practice in Central Italy: From the Middle Republic to the Early Empire*, London–New York 2019, p. 46–48, 140–141.

[131] It should be a fresh cheese, first stored in water, then dried and neatly crumbled, and finally mixed with honey.

[132] C a t o, 81. This recipe is one of the variants of the dessert known as *placenta*, cf. further in the text. On the dessert, cf. E.F. L e o n, *Cato's Cakes*, CJ 38.4, 1943,

The same author also writes about frying cheese. The method was used in preparing *globi*, made from cheese kneaded with finely ground flour and formed into small balls that were deep fried in (animal) fat, and eventually drizzled with honey and sprinkled with poppy seeds[133]. Equally, a dough with cheese was used to make *encytum*. In this case, however, it must have been of a thin enough consistency to be placed in a vessel with a hole in its bottom, from which (of course, through the hole) it was poured straight onto hot fat, giving it the shape of a hawser or rope[134]. The dessert was served with honey or *mulsum*[135].

Last but not least, cheese was included in complex foodstuffs which required baking, like, for instance, *placenta*. From the preserved recipe, we know that the dough was prepared in the same manner as *erneum*, except that it was baked under a clay lid covered by glowing embers[136].

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p. 219–220; P. Berdowski, *Przysmaki Katona, czyli o najstarszych przepisach kulinarnych Rzymian*, NF 3, 1998, p. 173. Cakes on the basis of cheese and honey in Cato's treatise, cf. K.D. White, *Cereals, Bread and Milling in the Roman World*, [in:] *Food...*, p. 41.

[133] Cato, 79. *Globi* were also fried in olive oil, cf. Varro, *De lingua Latina*, V, 107. On the dish, cf. E.F. Leon, *Cato's...*, p. 219; P. Berdowski, *Przysmaki...*, p. 177; C. Cerchiai Manodori Sagredo, *Fiori...*, p. 30. A contemporised version of the recipe, cf. P. Faas, *Around...*, p. 186–187.

[134] Cato, 77.

[135] Cato, 80. On the recipe, cf. C. Cerchiai Manodori Sagredo, *Fiori...*, p. 30. Cf. Athenaeus of Naucratis, XIV, 644 c–d (52, 1; 52, 6).

[136] Cato, 76. Other source references on the dessert, cf. Petronius, 35; Martial, III, 77, 3; V, 39, 3; VI, 75, 1; VII, 20, 8. Cf. E.F. Leon, *Cato's...*, p. 217–219; P. Berdowski, *Przysmaki...*, p. 169–173; S. Hill, A. Bryer, *Byzantine Porridge...*, p. 46–47; S. Grainger, *Cato's Roman Cheesecakes: The Baking Techniques*, [in:] *Milk...*, p. 169–170; A. Dalby, *Food...*, p. 70; M.J. Wilkins, S. Hill, *Food...*, p. 127; M. Leontsini, *Plakountai, Pies and Pancakes: Festive and Daily Baked Desserts in Byzantium (4th–12th c.)*, [in:] *...come sa di sale lo pane altrui. Il pane di Matera e i Pani del Mediterraneo. Atti del Convegno Internazionale di Studio promosso dall'IBAM–CNR nell'ambito del Progetto MenSALe Matera, 5–7 Settembre 2014*, ed. A. Pellettieri, Foggia 2014, p. 123–131. A contemporised version of the recipe, cf. A. Dalby, S. Grainger, *The Classical Cookbook*, London 2000, p. 94–96; P. Faas, *Around...*, p. 184–186. According to other recipes provided by Cato, the ingredients used to make *placenta* were also utilised in the preparation of such dishes as *spira* (Cato, 77), *scribilita* (Cato, 78), or *spaerita* (Cato, 82). On their basis, we can conclude that these delicacies differed in the manner in which the individual ingredients were combined, as well as

Cheese could also be one of the ingredients of bread dough, as certified by Galen, who describes a rustic practice of kneading unleavened bread with the addition of cheese. At the same time, however, he warns the reader against consuming such foodstuffs as they were considered to be extremely hard to digest, and, consequently, detrimental to health[137]. The lack of details in the description penned by the doctor of Peragmum is compensated for by the recipes for *libum*[138] and *savillum*[139], provided by Cato. A comparative analysis shows that the final products differed mainly in the proportion of ingredients (e.g., *savillum* required more cheese) and finishing. Both recipes involved careful preparation of the dough, which was kneaded from cheese, finely ground wheat flour[140] and an egg, and – in the case of *savillum* – also honey[141]. The main difference between the two is that *libum* was shaped into a loaf while the dough for *savillum* was placed in an oven-pan while being baked. The latter, at the end of the process, was also drizzled with honey and sprinkled with poppy seeds, and then baked again for a short while.

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in the presence of honey, the type of heat processing, and the final shape of the dish. On the aforementioned dishes, cf. E.F. Leon, *Cato's...*, p. 219–220; P. Berdowski, *Przysmaki...*, p. 173–174.

[137] Galen, *De alimentorum facultatibus*, 486, 3–9, vol. VI. On the subject, cf. J.M. Wilkins, S. Hill, *Food...*, p. 123, 239.

[138] Cato, 75. Other source references, cf. Horace, *Epistulae*, X, 10; Horace, *Sermones*, II 7, 102; Ovid, I, 128; III, 761; IV, 743–744; Martial, III, 77, 3; Athenaeus of Naucratis, III, 125 f (100, 1–2). On the dish, cf. E.F. Leon, *Cato's...*, p. 219; P. Berdowski, *Przysmaki...*, p. 175; S. Grainger, *Cato's Roman Cheesecakes...*, p. 170–171; Z. Rzeźnicka, M. Kokoszko, *Proso w gastronomii antyku i wczesnego Bizancjum*, VP 33, 2013, p. 408–409. Contemporised versions of the recipe, cf. A. Dalby, S. Grainger, *The Classical...*, p. 92–94; M. Grant, *Roman Cookery. Ancient Recipes for Modern Kitchens*, London 2002, London 2002, p. 59–60.

[139] Cato, 84. Cf. P. Berdowski, *Przysmaki...*, p. 176.

[140] *Libum* was also prepared from millet flour, cf. Ovid, IV, 743–744.

[141] It is worth adding that although Cato does not list this additive in the recipe for *libum*, the tradition of its preparation with honey is reported in *Fasti* by Ovid (III, 761). What is more, Athenaeus mentions that the delicacy was also made with milk. We cannot, however, exclude the possibility that in the process of its preparation, the beverage was coagulated and then used to make cheese, which was one of its main components, cf. Athenaeus of Naucratis, III, 125 f (100, 1).

Another culinary application of cheese is discussed by Diocles of Carystus (4th c. BC)[142], who allows us to conclude that it was considered a seasoning (equal, for instance, to oregano, summer savory, thyme, salt, vinegar and olive oil)[143], which – as seen from the later part of the text – should be used in moderation, since too much could have a harmful effect on the body[144]. As for details, the physician argued that fresh rennet cheese made from goat milk was the best choice when it came to seasoning dishes prepared by means of baking[145]. And yet from Galen's treatise, we learn that this suggestion was not always followed in practice, since the doctor of Pergamum reports a habit, common among the peasantry, which involved sprinkling a dish made from chickpeas with dry (thus mature and not fresh) grated cheese[146]. Furthermore, contrary to the accepted modern culinary manner, we can also conclude that the ancient experts in culinary art frequently used cheese to aromatise fish dishes[147], which is aptly illustrated by the following story quoted by Plutarch (1st/2nd c. AD). One day, a Laconian purchased a fish and gave it to a tavern-keeper to prepare. Wishing to season it, the publican replied that he would also need some cheese, vinegar and olive oil, to which the client retorted that if he had had all those ingredients, he would not have needed to buy the fish in the first place[148]. Possibly, the anecdote alludes

[142] On the physician, cf. M. W e l l m a n n, *Diokles (53)*, *RE*, vol. V, Stuttgart 1905, cols. 802–812; V. N u t t o n, *Diocles (6)*, [in:] *BNP*, vol. IV, Leiden–Boston 2004, cols. 424–426; K.-H. L e v e n, *Diokles v. Karystos*, [in:] *Antike Medizin...*, cols. 225–227; D. M a n e t t i, *Dioklēs of Karustos (400 – 300 BCE)*, [in:] *The Encyclopedia of Ancient Natural Scientists...*, p. 255–257.

[143] O r i b a s i u s, *Collectiones medicae*, IV, 3, 1, 1 – 13, 3 (cheese – IV, 3, 6, 1).

[144] From the text we can assume that the addition of (an excessive amount of) cheese had an unfavourable impact on the dietetic properties of the dish (O r i b a s i u s, *Collectiones medicae*, IV, 3, 6, 1–2).

[145] O r i b a s i u s, *Collectiones medicae*, IV, 3, 6, 2 – 7, 1.

[146] G a l e n, *De alimentorum facultatibus*, 532, 19 – 534, 7 (cheese – 533, 7–8). A contemporised recipe, cf. M. G r a n t, *Roman...*, p. 148.

[147] Cf. M. K o k o s z k o, *Ryby i ich znaczenie w życiu codziennym ludzi późnego antyku i wczesnego Bizancjum (III–VII w.)*, Łódź 2005, p. 387. On combining cheese with fish dishes, cf. J.M. W i l k i n s, S. H i l l, *Food...*, p. 53; A. D a l b y, *Cheese. A Global...*, p. 98–99; J. K o d e r, *Cuisine...*, p. 430.

[148] P l u t a r c h, 995 b, 10 – c, 3 (cheese – 995 c, 1).

to a simple way of life typical of the Spartans, and the Spartiate wanting to say that mixing all the aforementioned ingredients with fish would be too refined for him. Whatever the case, more detailed information on combining cheese and fish can be found in the *Deipnosophistae* by Athenaeus of Naucratis (2nd/3rd c. AD)[149], containing a quotation from Archestratus (4th c. BC)[150], who claims that cheese was chiefly used to season lean fish such as skate[151]. In all likelihood, this is also the reason why he is so indignant when writing about a common practice applied by Sicilian and Italian Greeks, who would serve the flesh of perch (which was fat by nature) with cheese[152]. To conclude, more information on combining cheese and fish is provided in a collection of recipes attri-

[149] Though Athenaeus' writings are not a collection of recipes, the prominence of the role of ancient food culture is stressed even in the title of the work. As a result, the *Deipnosophistae* is a dialogue full of information on various kinds of foodstuffs and the fashion in which they were prepared and served. Athenaeus of Naucratis often comments on food-related terms, and does it, as a rule, on the basis of an exceptionally high number of literary works of antiquity. The pattern adopted by him in his writings concerns milk, and its derivatives, too. What is more, his interest in foods is inextricably connected with the presence in the *Deipnosophistae* of numerous remarks related to medicine, and especially to ancient dietetics. Consequently, we can find there a substantial selection of names of physicians of varying degrees of prominence, and especially of those who were exceptionally knowledgeable in the principles of food's properties. So does the work contain a lot of general medical knowledge. This structure of data proves that Athenaeus of Naucratis identified himself with Hippocratic dietetics in its form cultivated by Galen, cf. J.-N. C o r v i s i e r, *Athenaeus, Medicine and Demography*, [in:] *Athenaeus and his World: Reading Greek Culture in the Roman Empire*, eds. D. B r a u n d, J. W i l k i n s, Exeter 2000, p. 492–502; R. F l e m m i n g, *The Physicians at the Feast. The Place of Medical Knowledge at Athenaeus' Dinner-Table*, [in:] *Athenaeus...*, p. 476–482; D. G o u r e v i t c h, *Hicesius' Fish and Chips. A Plea for an Edition of the Fragments and Testimonies of the Peri hylēs*, [in:] *Athenaeus...*, p. 483–491.

[150] On the poet, cf. A. D a l b y, *Food...*, p. 23–24.

[151] A t h e n a e u s o f N a u c r a t i s, VII, 286 d–e (26, 31–34; cheese – 26, 32). On the fish, cf. M. K o k o s z k o, *Ryby...*, p. 46–48. Archestratus also mentions the marbled electric ray stewed in wine, olive oil, and fresh herbs with the addition of cheese, cf. A t h e n a e u s o f N a u c r a t i s, VII, 314 d (95, 31–32; cheese – 95, 32). On the fish, cf. M. K o k o s z k o, *Ryby...*, p. 222–226. Mithaecus (5th c. BC) writes about red bandfish sprinkled with cheese and drizzled with olive oil, cf. A t h e n a e u s o f N a u c r a t i s, VII, 325 f (128, 5–7; cheese – 128, 7).

[152] A t h e n a e u s o f N a u c r a t i s, VII, 311 a–c (86, 16–29; cheese – 86, 28). Cf. J.M. W i l k i n s, S. H i l l, *Food...*, p. 48.

buted to Apicius, where we can find instructions for making a casserole (*patella*) from salted fish and cheese. According to the recipe, fried and cut fish should be stewed on a small fire in an aromatic sauce[153], together with cooked chicken brains and livers, hard-boiled eggs and fresh cheese. Next, the author recommends thickening the dish with raw eggs and sprinkling it with cumin prior to serving[154].

It is worth noting that the custom of mixing cheese with fish continued into the Middle Byzantine period, which is reflected in a work by Ptochoprodromos, who writes about *monókythron*, a multi-ingredient dish, containing – besides various species of salted fish and cheese – cabbage, eggs, garlic, etc. For our deliberations, it is interesting to notice the fact that the author distinguishes three types of cheese, i.e., Cretan, *vláchos* and so-called *apótyron*[155], stating that each gave the dish a specific aroma and a characteristic flavour. Although we do not have an extensive amount of data on the latter ingredient, Phaedon Koukoules associates it with a cheese known as *anthótyron*[156], which Andrew Dalby identifies as small-sized cheese made from the whey left over from the production of rennet cheeses[157]. What seems to prove its diminutive size is the fact that the author of the poem recommends using as many as twelve *apótyra*.

Meanwhile, from *Cletorologium* by Philotheos (9th c. AD) and a short work by Constantine VII Porphyrogennetos (10th c. AD)

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[153] This additive was made from lovage, oregano, rue seeds, wine (dry or sweetened with honey), and olive oil.

[154] A p i c i u s, IV, 2, 17. Another recipe for a casserole (here, with no fish meat) with cheese, cf. A p i c i u s, IV, 2, 13.

[155] P t o c h o p r o d r o m o s, IV, 204–216. On the dish, cf. F. K o u k o u l e s, *Byzantinōn bios kai politismos*, vol. V, *Hai trofai kai ta pota...*, Athènes 1952, p. 34, 78; A.-M. T a l b o t, *Mealtime...*, p. 119; A. D a l b y, *Cheese. A Global...*, p. 100–101; i d e m, *Tastes of Byzantium...*, p. 176; I. A n a g n o s t a k i s, *Byzantine...*, p. 87, 101; J. K o d e r, *Everyday Food...*, p. 144–145; i d e m, *Natural Environment...*, p. 215; i d e m, *Cuisine...*, p. 230.

[156] F. K o u k o u l e s, *Byzantinōn...*, p. 32. On this type of cheese, cf. *Culinaria Greece: Greek Specialities*, ed. M. M i l o n a, Königswinter 2004, p. 80.

[157] A. D a l b y, *Tastes of Byzantium...*, p. 73, 190. Cf. I. A n a g n o s t a k i s, *Byzantine Diet and Cuisine...*, p. 53. This cheese is still produced in Greece. In the 19th c., the residents of Paros and Antiparos specialised in its making. The foodstuff is consumed fresh or mature (covered by blue mould). The latter is popular in Lesbos and Heraklion, cf. A. D a l b y, *Tastes of Byzantium...*, p. 73–74.

entitled *De ceremoniis*[158], we can learn about a Byzantine tradition of consuming a cheese-based soup during Great Lent. Both authors write that – according to the prevailing custom – the period of abstention from meat was preceded by a week known as *tyrofágos* or *tyriné*, in which the diet of the worshippers was based on milk and its derivatives[159]. We can also read that during the Sunday that marked the beginning of the period (*kyriaké tés apokréas*), the emperor would hold a feast for the poor in Constantinople, and his own meal he would share only with the members of his immediate family. Two days later, i.e., on Tuesday, the ruler would visit the patriarchate to attend a banquet organised by the metropolitan bishop, where *tyrepsitós dzomós*[160] was served as the main course. Even though we do not know the details of its preparation, we can still determine three primary properties of the dish. And thus, in all probability, this was a type of soup or – as suggested by Ilias Anagnostakis – *fondue*, since the noun *dzomós* referred to a dish of a more or less liquid consistency[161]. The term *tyrepsitós*, in turn, allows us to conclude that the main ingredient of the delicacy was cooked (and thus, melted) cheese[162]. And since cheese naturally solidifies following a drop in temperature, it should be concluded that the dish was served hot.

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[158] On the work, cf. J.B. B u r y, *The Ceremonial Book of Constantine Porphyrogennetos*, EHR 22.86, 1907, p. 209–227; i d e m, *The Ceremonial Book of Constantine Porphyrogennetos (Continued)*, EHR 22.87, 1907, p. 417–439.

[159] On *tyrofágos*, cf. A.N.J. L o u v a r i s, *Fast...*, p. 197–198; A.-M. T a l b o t, *Mealtime...*, p. 119; A. D a l b y, *Tastes of Byzantium...*, p. 55; B. C a s e a u, *Byzantium*, p. 366; e a d e m, *Nourritures terrestres, nourritures célestes. La culture alimentaire à Byzance*, Paris 2015, p. 186, 190–191; M. G o b b e t t i, E. N e v i a n i, P. F o x, *The Cheeses of Italy...*, p. 17. On attitudes to milk and its derivatives in the society of late antiquity and Byzantium, cf. B. C h e v a l l i e r-C a s e a u, *Le christianisme byzantin et les produtis laitires*, [in:] *Latte e latticini...*, p. 103–113.

[160] P h i l o t h e o s, 760, 26; C o n s t a n t i n e VII P o r p h y r o g e n n e t o s, 760, 18. A slightly different interpretation of the circumstances in which the dish was served, cf. I. A n a g n o s t a k i s, *Byzantine...*, p. 86. On the dish, cf. B. C a s e a u, *Byzantium*, p. 366; C. A n g e l i d i, I. A n a g n o s t a k i s, *La concezione...*, p. 154.

[161] Cf. A. D a l b y, *Food...*, p. 307; M. K o k o s z k o, *Ryby...*, p. 378.

[162] Cheese was used in a similar way during the preparation of *monókythron*. On similarities between this dish and *tyrepsitós dzomós*, cf. I. A n a g n o s t a k i s, *Byzantine Delicacies...*, p. 87. On *tyrepsitós dzomós*, cf. F. K o u k o u l e s, *Byzantinōn...*, p. 34; I. A n a g n o s t a k i s, *Byzantine...*, p. 86; i d e m, *Byzantine Diet and Cuisine...*, p. 57.

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V

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Butter in Dietetics, Pharmacology, Therapeutic Procedures and Culinary Art: Galen and his Followers

1. Galen and later medical authors on butter in dietetics, pharmacology and therapeutics

Galen never devoted much of his attention to describing butter (*boútyron*) as a foodstuff[1]. Neither had he a lot to say on the subject in his main dietetic work, namely in *De alimentorum facultatibus*. From

[1] Butter in the Greco-Roman antiquity, cf. J. A n d r é, *L'alimentation et la cuisine à Rome*, Paris 1961, p. 158–159; A. D a l b y, *Siren Feasts. A History of Food and Gastronomy in Greece*, London–New York 1996, p. 65–66, 89; M. T o u s s a i n t-S a m a t, *Histoire naturelle et morale de la nourriture*, Paris 1997, p. 157; J.P. A l c o c k, *Milk and its Products in Ancient Rome*, [in:] *Milk. Beyond the Dairy. Proceedings of the Oxford Symposium on Food and Cookery 1999*, ed. H. W a l k e r, Totnes 2000, p. 33; C.A. D é r y, *Milk and Dairy Products in the Roman Period*, [in:] *Milk...*, p. 121; R.I. C u r t i s, *Ancient Food Technology*, Leiden–Boston–Köln 2001, p. 399–400; A. D a l b y, *Food in the Ancient World from A to Z*, London–New York 2003, p. 65; J.P. A l c o c k, *Food in the Ancient World*, Westport–London 2006, p. 83, 154; D.L. T h u r m o n d, *A Handbook of Food Processing in Classical Rome. For her Bounty no Winter*, Leiden–Boston 2006, p. 191–192; W. C a v a n a g h, *Food Preservation in Greece during the Late and Final Neolithic Periods*, [in:] *Cooking Up the Past: Food and Culinary Practices in the Neolithic and Bronze Age Aegean*, eds. C. M e e, J. R e n a r d, Oxford 2007, p. 115; J.M. W i l k i n s, S. H i l l, *Food in the Ancient World*, Malden, Mass.–Oxford 2006, p. 162; L. C i v i t e l l o, *Cuisine and Culture. A History of Food and People*, Hoboken 2008, p. 45.

this treatise we can learn that butter was made from milk fat, the greatest amount of which could be found in cow milk[2]. Galen compared its properties to olive oil, as he classified booth as fats, and explained that the similarity between the two could be observed when butter was spread on the surface of the body or over a tanned animal pelt[3]. He also indicated that, for this reason, butter (rather than olive oil) was used as a body care product by the inhabitants of some cooler regions of the Empire (i.e., in the areas, where olive groves were not a common sight)[4]. Galen also stated that the properties of the discussed substance were analogical to the qualities typical of animal fats (both in their liquid [*pimelé*] and solid [*stéar*] state[5]), and admitted to frequently using butter in his own medical practice[6].

More details regarding the qualities and application of butter can, unsurprisingly, be found in *De simplicium medicamentorum temperamentis ac facultatibus*[7]. The physician begins his disquisition by restating that it is made from the fat element of milk[8], and then moves on to dispute the opinion of Dioscorides, who claims that the foodstuff is obtained from the milk of sheep and goats[9]. According to Galen, it is produced from cow milk, as indicated even by the etymology of the word *boútyron*, which derives from the noun *boús*, which denotes 'cow'[10]. Short as it may seem,

[2] It is the only part of the passage that speaks of butter as a food.

[3] In the fragment he addressed the pharmacological characteristics of butter, explaining the fact that both olive oil and butter were emollients, equally able to smoothen the surface of both living skin and processed leather.

[4] Cf. P l i n y, XI, 239, 3–8.

[5] He explained that, just like a liquid fat (*pimelé*), butter, when cast into a fire, causes it to flame up, and also, just like a solid fat (*stéar*), it could be admixed to poultices.

[6] G a l e n, *De alimentorum facultatibus*, 683, 11 – 684, 6, vol. VI.

[7] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 272, 9 – 273, 18, vol. XII.

[8] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 272, 9 – 272, 12, vol. XII.

[9] D i o s c o r i d e s, II, 72, 1, 2–3.

[10] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 272, 12–15, vol. XII. Cf. P l i n y, XXVIII, 133, 2–3.

Galen's discussion with Dioscorides, in fact, points out to a pattern of husbandry in the Mediterranean, revealing differences in the breeding model in terms of location[11].

Further in his text, the physician focuses on the pharmacological characteristics of butter, indicating that it facilitated the concoction of harmful juices (in the parts of the body it was applied to) and, to a lesser extent, showed some diaphoretic effect (within the area it was rubbed into). Thus, i.e. because of its limited diaphoretic action, it should be applied only to tissues which were neither excessively soft nor hard[12]. As butter was not capable of healing hard tumours on the body, it was primarily applied in the treatment of inflammation of the parotids, swollen glands, and ailments occurring in the mouth, especially in children and women (i.e., in people of a delicate tissue constitution)[13]. Accordingly, butter could be used as an effective agent to alleviate gum irritation caused by teething[14]. The list of butter-based medicaments also includes cataplasms recommended to people suffering from pains in the sides of the thorax, and Galen explains the action by saying that, when administered orally, butter effectively removed phlegm from the lower respiratory tract; thereby its effectiveness was in cures prescribed for patients with pneumonia and inflammation of the pleura. In such cases, the afflicted person was to be served butter in a form that allowed them to lick it off in small portions. Galen is very detailed about the method. He explains that when taken in this way and with no additives, butter could effectively contribute to dispersing noxious humours (and, to a lesser degree, contributed to their expectoration). Meanwhile, butter

[11] Cf. the chapter in the present book on Diodcorides' discussion on butter.

[12] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 272, 15–17, vol. XII.

[13] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 273, 1–7, vol. XII. On the subject, cf. G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 266, 2–6, vol. XII. On the application of butter in treating children, cf. P l i n y, XI, 239, 7–8.

[14] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 273, 7–11, vol. XII.

enriched with honey or bitter almonds facilitated the excretion of the secretion lingering within the thorax (but to a lesser extent stimulated the concoction of harmful juices)[15].

A recourse to later medical texts shows that Galen's teachings were not subject to modification. That is why analogical content regarding the properties of butter can also be found in the works of Oribasius[16], who

[15] G a l e n, *De simplicium medicamentorum temperamentis ac facultatibus*, 273, 11–18, vol. XII.

[16] Butter as a substance facilitating the digestion of harmful humours – O r i b a s i u s, *Collectiones medicae*, XIV, 36, 1, 1–5 (butter – XIV, 36, 1, 4); O r i b a s i u s, *Synopsis*, II, 25, 1, 1–3 (butter – II, 25, 1, 3); O r i b a s i u s, *Libri ad Eunapium*, II, 11, 1, 1–4 (butter – II, 11, 1, 3); butter as a substance facilitating the removal of purulence – O r i b a s i u s, *Synopsis*, II, 26, 1, 1–3 (butter – II, 26, 1, 3); O r i b a s i u s, *Libri ad Eunapium*, II, 12, 1, 1–16 (butter – II, 12, 1, 13); butter as a softening substance – O r i b a s i u s, *Collectiones medicae*, XIV, 38, 1, 1 – 14, 6 (butter – XIV, 38, 14, 5); O r i b a s i u s, *Synopsis*, II, 27, 1, 1–6 (butter – II, 27, 1, 6); O r i b a s i u s, *Libri ad Eunapium*, II, 13, 1, 1–23 (butter – II, 13, 1, 23); butter as a substance facilitating the clearing of the lower respiratory tract – O r i b a s i u s, *Synopsis*, II, 39, 1, 1 – 3, 8 (butter – II, 39, 1, 1); O r i b a s i u s, *Libri ad Eunapium*, II, 17, 1, 1 – 2, 2 (butter – II, 17, 1, 2); butter as a diaphoretic substance – O r i b a s i u s, *Collectiones medicae*, XIV, 60, 1, 1 – 2, 49 (butter – XIV, 60, 2, 42); O r i b a s i u s, *Synopsis*, II, 50, 1, 1–18 (butter – II, 50, 1, 16); O r i b a s i u s, *Libri ad Eunapium*, II, 23, 1, 1–32 (butter – II, 23, 1, 6). Pharmacological characteristics of butter – O r i b a s i u s, *Collectiones medicae*, XV, 2, 8, 1–5; O r i b a s i u s, *Libri ad Eunapium*, II, 1, b, 12, 1 – 13, 4. Butter in late antiquity and the Byzantine period – S. D a r, *Food and Archaeology in Romano-Byzantine Palestine*, [in:] *Food in Antiquity*, eds. J. W i l k i n s, D. H a r v e y, M. D o b s o n, Exeter 1999, p. 333; I. A n a g n o s t a k i s, *Trofikes dēlētēriaseis sto Byzantio. Diatrofikes antilēpseis kai symperifores (6os–11os ai.)*, [in:] *Byzantinōn diatrofē kai mageireiai. Praktika ēmeridas "Peri tes diatrofēs sto Byzantio". Thessalonikē Mouseio Byzantinou Politismou 4 Noembriou 2001. Food and Cooking in Byzantium. Proceedings of the Symposium "On Food in Byzantium". Thessaloniki Museum of Byzantine Culture 4 November 2001*, ed. D. P a p a n i k o l a-B a k i r t z i, Athena 2005, p. 89; A.A. D e m o s t h e n o u s, *The Scholar and the Partridge: Attitudes Relating to Nutritional Goods in the Twelfth Century from the Letters of the Scholar John Tzetzes*, [in:] *Feast, Fast or Famine. Food and Drink in Byzantium*, eds. W. M a y e r, S. T r z c i o n k a, Brisbane 2005, p. 30; E. K i s l i n g e r, *Trōgontas kai pinontas ektos spitiou*, [in:] *Byzantinōn diatrofē...*, p. 56; A.N.J. L o u v a r i s, *Fast and Abstinence in Byzantium*, [in:] *Feast...*, p. 197; Ch. B o u r b o u, M.P. R i c h a r d s, *The Middle Byzantine Menu: Palaeodietary Information from Isotopic Analysis of Humans and Fauna from Kastella, Crete*, IJOa 17, 2007, p. 65; M. G r ü n b a r t, *Store in a Cool and Dry Place: Perishable Goods and their Preservation in Byzantium*, [in:] *Eat, Drink and Be Merry (Luke 12:19). Food and Wine in Byzantium. In Honour of Professor A.A.M. Bryer*,

additionally refers to Dioscorides' passage on the production of medicinal soot obtained from the product[17]. This last issue, in turn, is entirely ignored by Aëtius of Amida[18] and Paul of Aegina[19], who only quote a few extracts from Galen's works. The short description of the properties

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eds. L. B r u b a k e r, K. L i n a r d o u, Aldershot 2007, p. 48; J. K o d e r, *Stew and Salted Meat – Opulent Normality in the Diet of Every Day?*, [in:] *Eat, Drink and Be Merry...*, p. 64; A. D a l b y, *Tastes of Byzantium. The Cuisine of a Legendary Empire*, London–New York 2010, p. 55, 72; Ch. B o u r b o u, *Fasting or Feasting? Consumption of Meat, Dairy Products and Fish in Byzantine Greece. Evidence from Chemical Analysis*, [in:] *Zōa kai periballon sto Byzantio (7os–12os ai.)*, eds. I. A n a g n o s t a k i s, T.G. K o l i a s, E. P a p a d o p o u l o u, Athena 2011, p. 101; M. K o k o s z k o, *Rola nabiału w diecie późnego antyku i wczesnego Bizancjum (IV–VII w.)*, ZW 16, 2011, p. 21–22; i d e m, *Smaki Konstantynopola*, [in:] *Konstantynopol – Nowy Rzym. Miasto i ludzie w okresie wczesnobizantyńskim*, eds. M.J. L e s z k a, T. W o l i ń s k a, Warszawa 2011, p. 489; I. A n a g n o s t a k i s, *Byzantine Diet and Cuisine. In between Ancient and Modern Gastronomy*, [in:] *Flavours and Delights. Tastes and Pleasures of Ancient and Byzantine Cuisine*, ed. I. A n a g n o s t a k i s, Athens 2013, p. 53; M. L e o n t s i n i, *Hens, Cockerels and Other Choice Fowl. Everyday Food and Gastronomic Pretensions in Byzantium*, [in:] *Flavours and Delights...*, p. 119, 129; e a d e m, *Butter and Lard Instead of Olive Oil? Fatty Byzantine Meals*, [in:] *Identità euromediterranea e paesaggi culturali del vino e dell'olio. Atti del Convegno Internazionale di Studio promosso dall'IBAM–CNR nell'ambito del Progetto MenSALe Potenza, 8–10 Novembre 2013*, ed. A. P e l l e t t i e r i, Foggia 2014, p. 226; Ch. B o u r b o u, S. G a r v i e-L o k, *Bread, Oil, Wine and Milk: Feeding Infants and Adults in Byzantine Greece*, [in:] *Archaeodiet in the Greek World. Dietary Reconstruction from Stable Isotope Analysis*, eds. A. P a p a t h a n a s i o u, M.P. R i c h a r d s, S.C. F o x, Princeton 2015, p. 174; Z. R z e ź n i c k a, *Milk and Dairy Products in Ancient Dietetics and Cuisine According to Galen's De alimentorum facultatibus and Selected Early Byzantine Medical Treatises*, [in:] *Latte e latticini. Aspetti della produzione e del consume nella società miditerranee dell'Antichità e del Medioevo. Atti del Convegno Internazionale di Studio promosso dall'IBAM – CNR e dall'IRS – FNER nell'ambito del Progetto MenSALe Atene, 2–3 Ottobre 2015*, eds. I. A n a g n o s t a k i s, A. P e l l e t t i e r i, Lagonegro 2016, p. 52, 62–63.

[17] O r i b a s i u s, *Collectiones medicae*, XI, beta, 14, 1–9. Analogical data, cf. D i o s c o r i d e s, II, 72, 1, 1–4 (butter); II, 72, 3, 1–7 (soot).

[18] A ë t i u s o f A m i d a, II, 221, 1–4 (butter – II, 221, 4) – butter as a substance facilitating the digestion of harmful humours; II, 222, 1–3 (butter – II, 222, 3) – butter as a substance facilitating the removal of purulence; II, 223, 1–8 (butter – II, 223, 8) – butter as a softening substance; II, 235, 1–17 (butter – II, 235, 15) – butter as a diaphoretic substance. Pharmacological characteristics of butter – A ë t i u s o f A m i d a, II, 104, 1–13.

[19] P a u l o f A e g i n a, VII, 3, 2, 63–66.

of butter is, however, compensated for by numerous passages containing cases of its therapeutic application[20]. Owing to the high number of such recommendations, I am unable to refer to them all, but, instead, I would like to offer a few examples that focus exclusively on the treatment of delicate parts of the body as well as on conditions of the respiratory system. Limited as they are, they still suffice to prove the fact that butter was a common *fármakon* during the early Byzantine period.

As for the first application, we can learn from Oribasius' writings that men suffering from pains in the scrotum and genital area were advised, *inter alia*, to apply an ointment made from butter and resin (melted in equal proportions)[21]. Moreover, the same medicament, ground together with cumin, was similarly used in the treatment of

[20] Butter in ancient and Byzantine therapeutics and cosmetics – A. D a v i d s o n, *Butter*, [in:] *The Oxford Companion to Food*, ed. A. D a v i d s o n, Oxford–New York 1999, p. 117; H. K i n g, *Food and Blood in Hippokratic Gynaecology*, [in:] *Food...*, p. 355–356; C.A. D é r y, *Milk...*, p. 123–124; H.E.M. C o o l, *Eating and Drinking in Roman Britain*, Cambridge 2006, p. 94; D.L. T h u r m o n d, *A Handbook...*, p. 191; J.M. W i l k i n s, S. H i l l, *Food...*, p. 162; M. C h r o n ē, *Therapeies astheneiōn me zōikēs proeleuseōs yles sta byzantina iatrika keimena. Symbolē stēn meletē tōn antilēpseōn gia tis astheneies kai tis therapeies tous sto Byzantio*, BSym 20, 2010, p. 153, 160–161, 164; e a d e m, *Ē panida stēn diatrofē kai stēn iatrikē sto Byzantio*, Athenai 2012, p. 209–217; F. M c C o r m i c k, *Cows, Milk and Religion: The Use of Dairy Produce in Early Societies*, AZoo 47.2, 2012, p. 106; M. K o k o s z k o, *Galaktologia terapeutyczna (γαλαχτολογία ἰατρική) Galena zawarta w De simplicium medicamentorum temperamentis ac facultatibus*, PNH 14.2, 2015, p. 15–17, 21–22; i d e m, *Galen's Therapeutic Galactology (γαλαχτολογία ἰατρική) in De simplicium medicamentorum temperamentis ac facultatibus*, [in:] *Latte e latticini...*, p. 42–43, 46–47; Z. R z e ź n i c k a, *Mleko i przetwory mleczne w medycynie wczesnego Bizancjum na przykładzie pism Orybazjusza*, [in:] *Leki i choroby odzwierzęce*, eds. L. W d o w i a k, B. P ł o n k a-S y r o k a, A. S y r o k a, vol. I, Wrocław 2016, p. 58–60.

[21] O r i b a s i u s, *Synopsis*, IX, 35, 1, 1 – 6, 4 (quoted formula – IX, 35, 1, 1–2; butter – IX, 35, 1, 1); O r i b a s i u s, *Libri ad Eunapium*, IV, 102, 1, 1 – 6, 4 (formula – IV, 102, 1, 1–2; butter – IV, 102, 1, 1). An analogical formula is provided by Paul of Aegina, in the chapter devoted to agents which subdue the influx of sharp juices and facilitate the healing of wounds, cf. P a u l o f A e g i n a, III, 59, 2, 1 – 3, 15 (formula – III, 59, 3, 1–2; butter – III, 59, 3, 1). Butter was also used in the preparation of a variant of the *keroté* ointment, administered for inflammatory conditions (accompanied by fever) of the scrotum and anus, cf. A ë t i u s o f A m i d a, V, 132, 1–20 (analysed extract – V, 132, 14–15; butter – V, 132, 14).

orchitis[22], while chapped skin on the foreskin and glans, as well as any ulcerations within the area, were treated with an ointment made from burned and then slaked Phrygian stone[23]. As revealed in the passage, the stone was burned and slaked three times in all: first, it was mixed with butter (or rose oil), then with wine, and finally with honey. Later, the pharmaceutical was combined with rose petals and the husk of a pomegranate[24]. The formula must have been considered effective as it is also quoted in the 7th c. by Paul of Aegina[25]. Butter was also commonly utilised in the preparation of miscellaneous gynaecological medicaments. Owing to its properties, it is listed as an ingredient of so-called emollient suppositories (as mentioned by Oribasius, who quotes the findings made by Antyllus [2nd c. AD][26]). The physician classifies them among intrauterine preparations[27], administered for inflammations and irritations of the uterus, ailments induced by hypothermia of the uterine appendages, and flatulence caused by a disorder within the uterus. As ingredients of the medicaments, in addition to unsalted butter[28], Oribasius mentions Tyrrhenian wax, alkanet and lilac oils, goose and chicken fat, burned resin, deer bone marrow and fenugreek[29]. Furthermore, butter

[22] Oribasius, *Synopsis*, IX, 36, 1, 1 – 3, 3 (a butter-based ointment – IX, 36, 1, 3 – 2, 1); Oribasius, *Libri ad Eunapium*, IV, 103, 1, 1 – 3, 3 (a butter-based ointment – IV, 103, 1, 3 – 2, 1).

[23] On Phrygian stone, cf. Oribasius, *Collectiones medicae*, XIII, lambda, 2, 1–7.

[24] Oribasius, *Eclogae medicamentorum*, 83, 1, 1 – 9, 2 (quoted formula – 83, 2, 1 – 3, 1; butter – 83, 2, 3).

[25] Paul of Aegina, VII, 12, 32, 1–4 (butter – VII, 12, 32, 3).

[26] About the physician, cf. A.M. Ieraci Bio, *Antyllos*, [in:] *Antike Medizin. Ein Lexikon*, ed. K.-H. Leven, München 2005, cols. 62–63; V. Nutton, *Antyllus*, [in:] *BNP*, vol. I, Leiden–Boston 2002, cols. 810–811.

[27] Within the same group, the physician also classifies suppositories as having a styptic and opening effect.

[28] One probably had to use fresh butter, since any addition of salt could lead to irritation of the organ.

[29] Oribasius, *Collectiones medicae*, X, 25, 1, 1 – 4, 5 (quoted extract – X, 25, 1, 1 – 2, 5; butter – X, 25, 2, 4). From the account of Paul of Aegina, we can conclude that some of the aforementioned ingredients could equally well be combined into one compound medication, since the author recommends a medicament compiled from Pontic wax, the oils of spikenard and iris, wine must, lawsonia oil, bear and goose fat, butter, hyssop, deer bone marrow, and terebinth resin, cf. Paul of Aegina, III, 68, 2, 1–14 (analysed

was also used to produce *enneafármakos pessós*, i.e., a vaginal suppository consisting of nine ingredients, which – as reported by Oribasius – was administered for amenorrhoea caused by hardenings or ulcerations within the uterus. According to the preserved formula, this medicament was made by melting equal amounts of wax, deer bone marrow, goose and ox fat, butter, terebinth resin, honey, and rose and castor oils[30]. Paul of Aegina's output, in turn, testifies to the fact that much simpler vaginal suppositories (made from butter with the addition of hyssop) were still prescribed by doctors towards the end of the early Byzantine period[31].

The Byzantine experts in *ars medica* also used butter to cure miscellaneous diseases of the respiratory system. In such cases, Aëtius of Amida recommends, for instance, an internal application of a medicament made from butter mixed with honey[32]. This type of mixture was still made use of in the 7th c. AD, as Paul of Aegina teaches us that it should be administered as an *élleigma*[33]. A somewhat more complex prescription included honey, fresh butter, cumin, and flaxseed. As explained, butter and other ingredients were first added to the honey (with its impurities skimmed off), and then the mixture was boiled[34]. Yet another version of the medicament consisted of hyssop, *kómmi* resin, pennyroyal,

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extract – III, 68, 2, 2–4; butter – III, 68, 2, 3). Moreover, as we learn from Oribasius, butter could also be a component of softening medicines recommended for inflammations of the uterus (the author does not specify the form in which it was administered to patients). Among the aforementioned medicaments, he lists a medicament made from fresh butter (used instead of pork fat) and fenugreek juice, and a medication compiled from butter mixed with hyssop and *melíkraton*, cf. Oribasius, *Libri ad Eunapium*, IV, 112, 1, 1 – 14, 1 (medicine made from fenugreek juice and butter – IV, 112, 3, 3; medicament from hyssop, butter and *melíkraton* – IV, 112, 3, 4–5).

[30] Oribasius, *Synopsis*, III, 2, 1, 1 – 3, 1 (butter – III, 2, 1, 2); Oribasius, *Eclogae medicamentorum*, 146, 1, 1 – 17, 3 (formula – 146, 17, 1–3; butter – 146, 17, 3). An analogical formula, cf. Aëtius of Amida, XV, 27, 1–5 (butter – XV, 27, 4); Paul of Aegina, VII, 24, 6, 1–3 (butter – VII, 24, 6, 3).

[31] Paul of Aegina, III, 64, 1, 1 – 3, 16 (butter with hyssop – III, 64, 2, 17).

[32] Aëtius of Amida, III, 143, 1, 1–16 (butter – III, 143, 12).

[33] Paul of Aegina, III, 28, 4, 1 – 13, 4 (butter – III, 28, 6, 1).

[34] Oribasius, *Eclogae medicamentorum*, 28, 1, 1 – 5, 4 (analysed formula – 28, 3, 1 – 4, 1; butter – 28, 3, 1; 28, 4, 1); Aëtius of Amida, VIII, 58, 1–109 (analysed formula – VIII, 58, 74–77; butter – VIII, 58, 75–76).

ajowan (*Carum copticum* L.), pepper, husked yellow vetch, iris, spikenard, terebinth resin, fresh butter and honey. Here, the melted butter, resin and honey were blended prior to the addition of the remaining ingredients[35]. Moreover, butter was regarded as effective in the treatment of more serious diseases – such as consumption, in which case it was taken, both orally and externally (i.e., as an ointment)[36]. Such information is provided by, for example, Aëtius of Amida, who refers to Galen's teachings, and reports that an inflammatory condition of the lungs – manifested by sudden pain – should be treated with *keroté* made from butter and laurel or alkanet oils. In order to cleanse the lungs, he also recommends a compress made up of equal amounts of terebinth resin, wax, alkanet, butter, deer bone marrow, ox fat, and crumbled iris and hyssop[37]. Last but not least, for problems with expectoration, the physician recommends consuming a spoonful of fresh butter on an empty stomach[38].

2. Butter in cuisine

I should start with a remark that medical sources never characterise butter in terms of dietetics and are very parsimonious with information on its culinary use. That said, medical doctors are happy to list its therapeutic actions and mention a cornucopia of procedures which involved its application. As a result, we may conclude that butter was more frequently perceived as a pharmaceutical agent than a foodstuff.

It should also be added that such an approach is perfectly understandable in view of the easy access to olive oil in the region. Accordingly, one can surmise that butter played a marginal role in the gastronomy of the region, which is additionally corroborated by the lack

[35] Aëtius of Amida, VIII, 58, 1–109 (quoted formula – VIII, 58, 83–88; butter – VIII, 58, 86–87). An analogical formula, cf. Aëtius of Amida, VIII, 58, 94–97 (butter – VIII, 58, 96).

[36] For instance, cf. Oribasius, *Synopsis*, IX, 4, 1, 1 – 12, 2 (butter – IX, 4, 8, 1–2).

[37] Aëtius of Amida, VIII, 75, 1–145 (quoted extract – VIII, 75, 29–34; butter – VIII, 75, 30).

[38] Aëtius of Amida, VIII, 75, 56–59 (butter – VIII, 75, 56–58).

of information on its production and consumption in both agronomical sources and the recipe collection attributed to Apicius. On the other hand, Pliny acknowledges that Greco-Roman culture was characterised by a general awareness of the fact that butter was eaten regularly by barbarian peoples[39]. As a result, one can venture the hypothesis that the consumption of butter in classical antiquity was an indicator of foreignness and could imply a lack of refined culture.

As for data which could be classified as culinary, the most comprehensive amount of information on butter included in one literary work is provided neither by a medical nor a culinary author but by Pliny. He starts with a comment which corroborates the teachings of the Greek medical doctors which I have already cited – notably, that butter was produced primarily from cow milk. The author indicates, however, that the milk of sheep and goats could also be used for the purpose[40]. What is especially informative is the fact that in *Historia naturalis* we can read about the production technology of butter (which supplements

[39] Cf. P l i n y, XXVIII, 133, 1–2. A similar image of butter consumers is present in the *Deipnosophistae* by Athenaeus of Naucratis. In the work, butter is listed as a foodstuff of the barbarians known as Thracians, cf. A t h e n a e u s o f N a u c r a t i s, IV, 7 b (7, 8). On the subject, cf. K. B a r t o l, J. D a n i e l e w i c z, *Komedia grecka od Epicharma do Menandra. Wybór fragmentów*, Warszawa 2011, p. 295. This mention in the *Deipnosophistae* well corresponds with Galen's remark that butter was typical of the cold (i.e. northern) parts of the inhabited world – G a l e n, *De alimentorum facultatibus*, 684, 2–3, vol. VI. The foodstuff was, however, also typical of those living in the south, as according to Strabo (1st c. BC/ 1st c. AD), butter was a substitute for olive oil for the Nabataeans, who dwelled in the Roman province of Arabia (cf. S t r a b o, XVI, 4, 24), and for the peoples living in the territories of ancient Ethiopia (cf. S t r a b o, XVII, 2, 2). On butter as barbarian peoples' foodstuff, cf. P. G a r n s e y, *Food and Society in Classical Antiquity*, Cambridge 1999, p. 67; J.P. A l c o c k, *Milk...*, p. 33; C.A. D é r y, *Milk...*, p. 121; A. D a l b y, *Tastes of Byzantium...*, p. 72; J.P. A l c o c k, *Food...*, p. 159, 167, 178, 235; J.M. W i l k i n s, S. H i l l, *Food...*, p. 24; F. M c C o r m i c k, *Cows...*, p. 106; D. B r a u n d, *Food among Greeks of the Black Sea: the Challenging Diet of Olbia*, [in:] *A Companion to Food in the Ancient World*, eds. J. W i l k i n s, R. N a d e a u, Malden, Mass.–Oxford–Chichester 2015, p. 303; C. C e r c h i a i M a n o d o r i S a g r e d o, *Fiori per prima l'età dell'oro... fiumi di latte scorrevano (Ov. Met., I, 89;111)*, [in:] *Latte e latticini...*, p. 31.

[40] P l i n y, XXVIII, 133, 3–4.

Dioscorides' scant evidence[41]). Pliny maintains that the process consisted of two stages. The first phase involved shaking a sealed vessel with milk, which made the fat gather on the surface of the liquid[42]. Once the first portion of butter was collected, the remaining buttermilk was coagulated[43]; then the milk curd was filtered and, ultimately, salted. The thus obtained product was called *oxygala*. Subsequently, the remaining whey was heated in another vessel, and the second portion of fat (which had accumulated on its surface) was collected again. The author adds that butter characterised by an intense aroma was the most valued[44], which may mean that it was not used fresh but stored for a time long enough for butyric acid to form[45].

The analysis of medical treatises confirms, at least partially, the data recorded by Pliny, and provides some additional information in the field of culinary art. Accordingly, from Dioscorides, we learn that butter was made by churning milk in a vessel[46]. What is more, in the descriptions of various therapeutic procedures, physicians recommended applying butter without the addition of salt, which, in all probability, means that salt was frequently used to preserve the product[47]. Anthimus, however, accounts that the salted kind was harmful to health, and thus not suitable for patients suffering from consumption, to whom he recommended exclusively an oral intake of unsalted, i.e., fresh, (mixed with honey) butter[48].

[41] Cf. the chapter in the book on Dioscorides' milk theory.

[42] From the analysed extract, we can also learn that the method of preparing this product depended on the season (i.e., on the outdoor air temperature). From the author's account, we may presume that in winter, milk was heated prior to churning.

[43] The author explains that a small amount of water was added to milk to sour it.

[44] Pliny, XXVIII, 133, 4 – 134, 4.

[45] Cf. a different interpretation of Pliny's evidence – C. Cerchiai Manodori Sagredo, *Fiori...*, p. 31.

[46] Dioscorides, II, 72, 1, 3–4. Cf. Oribasius, *Collectiones medicae*, XI, beta, 14, 1–3.

[47] Cf. Oribasius, *Collectiones medicae*, X, 25, 2, 4.

[48] Anthimus, 77. Just like with other medicaments of that type, this medication was supposed to be licked off gradually and in small portions. Butter on the Constantinopolitan market, cf. *Liber praefecti*, 13, 1.

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VI

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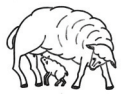
Appendix, or on a Clear Understanding



As an appendix to the above analysis of milk and other dairy products we attach our research into one term that is connected with the subject of dairy. This is a study into the meaning of one noun exclusively, a term which reads in Greek *pyríephtha*. In the text we try to demonstrate how important it is to correctly and fully understand ancient terminology regarding foodstuffs[1].

1. *Pyríephtha* – an enigmatic term

In book XIV of the *Deipnosophistae*, there is a line from the comedy entitled *Flutes* (*Auloí*), written in the 3rd or 4th c. BC by Philippides[2]. Together with a commentary on the meaning of the term used by the comic

[1] As we consider ancient Greek indispensable to fully understand our line of reasoning, in the appendix, we deviate from our normal pattern of transliterating it and include select passages in the original version.

[2] G.B. P h i l i p p, *Philippides, ein politischer Komiker in hellenistischer Zeit*, G 80, 1973, p. 493–509; J. H e n d e r s o n, *Comedy in the Fourth Century II: Politics and Domesticity*, [in:] *The Oxford Handbook of Greek and Roman Comedy*, eds. M. F o n t a i n e, A.C. S c a f u r o, Oxford 2014, p. 190.

poet which precedes the quotation, it reads in the following fashion:

> Πυριέφθων δὲ μνημονεύει (οὕτω δὲ καλεῖται τὸ πρῶτον
> γάλα) Φιλιππίδης ἐν Αὐλοῖς (III 304 K)·
> τὰ δὲ πυρίεφθα καὶ τὰ λάγανα ταῦτ' ἔχων[3].

Our translation of the excerpt is as follows:

> *Pyríephtha* (πυρίεφθα) (and this is how colostrum is named)
> are mentioned by Philippides in *The Flutes*:
> *pyríephtha* (πυρίεφθα) and *lágana* (λάγανα) having...

Despite the excerpt being quite short, it does provide grounds to envisage the situation it outlines, which we imagine as a meal of some kind. Moreover, the author lists its *sui generis* menu which consist of two items only. The term *lágana* refers to a type of bread which belonged to a broader category known as *ítria* – unleavened flatbread made of wheat flour and water[4], which was characterised by Athenaeus himself in a separate chapter, namely the bread catalogue included in Book III of his work[5].

On the other hand, we conclude from the same menu that *pyríephtha* were a kind of addition to bread, i.e., *ópson*, eaten with broken pieces of flatbread. Their role is confirmed by another extract from the *Deipnosophistae*, in which Athenaeus explains that foodstuffs of this type were *hedýsmata*, i.e., the thing that distinguished menus served during get-togethers. He also mentions that the Macedonians called these kinds of snacks *epideipnídes*, and that they were served during wine-drinking feasts[6].

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[3] Athenaeus of Naucratis, XIV, 658 d–e (76, 32–34).

[4] A. Dalby, *Food in the Ancient World from A to Z*, London–New York 2003, p. 251; M. Kokoszko, K. Jagusiak, Z. Rzeźnicka, *Cereals of Antiquity and Early Byzantine Times. Wheat and Barley in Medical Sources*, transl. K. Wodarczyk, M. Zakrzewski, M. Zytka, Łódź 2014, p. 92, 105, 140, etc.

[5] Athenaeus of Naucratis, III, 110 a–b (74, 55–65).

[6] Athenaeus of Naucratis, XIV, 658 e (76, 35–36).

Athenaeus provides us with a definition of *pyríephtha*, thus indicating that it was not a widely known term. Indeed the noun must have been extremely enigmatic because it tended to be explained both in ancient and Byzantine lexicography. For instance, in the writings by Julius Pollux (2nd c. AD)[7], *pyríephtha* (also quoted in the context of the extract from Philippides' comedy) was mentioned[8] alongside such synonymous expressions as *pýon* and *pyriáte*[9]. We can also come across this word in medical literature, e.g. Galen maintains that the word *pyríefthon* or *pyríefthos* was used during his times in Asia Minor[10].

Referring back to Athenaeus' work, we would like to stress that the definition of the term *pyríephtha* as colostrum in his text raises serious doubts. First of all, the chapter in which this term is originally used constitutes part of a larger entity, the main subject matter of which is a description of various types of cheese, i.e., one of the typical *ópsa*. Therefore, a sudden deviation from the main issue to colostrum seems unwarranted[11] as it had never been classified within the said group, since *ópsa* referred to solid products or spreads, but not liquids.

Secondly, the grammatical form of the word *pyríephtha* clearly indicates that this term is in the plural of the neuter gender. In accordance with the rules of Greek grammar, this form cannot refer to milk, and thus is inappropriate in relation to the *designatum* which Athenaeus stipulated as 'colostrum' (*próton gála*), since this word (as an uncountable noun) ought to be used exclusively in the singular. Due to such a *usus linguae*, the plural form of *pyríephtha* used by Philippides implies that the *designatum* is a countable noun of neuter gender (accordingly,

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[7] On Pollux, cf. R. To s i, *Polluce: struttura onomastica e tradizione lessicografica*, [in:] *L'Onomasticon di Giulio Polluce*, eds. C. B e a r z o t, F. L a n d u c c i, G. Z e c c h i n i, Milano 2007, p. 3–16; S. M a t t h a i o s, *Greek Scholarship in the Imperial Era and Late Antiquity*, [in:] *Brill's Companion to Ancient Greek Scholarship*, eds. F. M o n t a n a r i, S. M a t t h a i o s, A. R e n g a k o s, vol. I–II, Leiden–Boston 2015, p. 286, 294–296.

[8] We find it symptomatic that it was mentioned among animal foodstuffs, which are typical *ópsa*. Cf. deliberations below.

[9] P o l l u x, VI, 54.

[10] G a l e n, *De alimentorum facultatibus*, 694, 17, vol. VI.

[11] A t h e n a e u s o f N a u c r a t i s, XIV, 658 a–e (76, 1–36).

in its singular it takes the form of *pyríefthon*), which is logically (and situationally[12]) linked with the noun *lágana*, and it means not one, but many additions consumed with the said flatbread.

Fortunately, the text of the *Deipnosophistae* itself enables us to reinterpret the meaning of the term *pyríephtha* given by Athenaeus. As mentioned above, the whole chapter in which the word appears is devoted to cheeses and there is no reason for *pyríephtha* to be regarded as an exception to the rule. 'Cheese' in Greek is a countable noun, since it is a solid product with a specific shape attributed to each of its types. If the term *pyríephtha* meant 'colostrum'[13], there would be no justification for making use of this noun in the plural, but instead it would be more logical to use its singular form, and illustrate the concept of amount, using degrees of volume.

Even more information on the nature of *pyríephtha* can be retrieved from an extract that precedes the quotation from Philippides, since Athenaeus places the line in question from *Auloí* in the section of the chapter devoted to small-sized cheeses. As we can learn, the category included, for instance, flattened oval-shaped cheese pats, which, in Crete, were called *theleíai* (i.e., 'feminine')[14]. A similar size is suggested in another quotation by Athenaeus, in which cheeses served during the feast[15] are presented as snacks consumed with wine[16].

Finally, it is worth noting that the word *pyríephtha* is itself a term that is connected with the production technology of its *designatum*, because this noun incorporates the words *pýr* ('fire') and *héftho* ('boil'), which leads to the inference that the said cheeses were produced through heat-induced coagulation of milk. This hypothesis is confirmed in an extract from Galen's *De alimentorum facultati-*

[12] Philippides described a meal during which the feasters consumed flatbread with the addition of *pyríephtha*.

[13] As it was interpreted until the publication of the *Deipnosophistae*, translated and edited by Stuart Douglas Olson.

[14] Athenaeus of Naucratis, XIV, 658 d (76, 29–31).

[15] The author used the term *kóthon*, which normally means a drinking bout.

[16] Athenaeus of Naucratis, XIV, 658 e (76, 35–36).

bus, in which the author describes a method of precipitating milk curd without the addition of rennet, by only heating up milk[17]. Another fact that supports the thesis is that in the same extract from Galen's work we can find the term *pyriáte*, whose root also stems from the noun *pýr* or the verb *pyróo* ('to heat up over fire'), and which in ancient Greek comedy, as the doctor of Pergamum puts it, was a synonym of *pyríefthon/pyríefthos*. Furthermore, he also writes that these nouns have the meaning of 'milk curd' (*pagén gála*) and not just milk itself[18]. This opinion is additionally confirmed by Hesychius of Alexandria[19], who recorded the term *pyriatón* in his lexicon, defining it as a dairy product obtained by boiling milk over fire[20]. A topical entry can also be found in the work by Pausanias (1st/2nd c. AD)[21], who states that the term *pyós* describes either fresh milk or a product made by boiling yesterday's milk, i.e., soured, and fresh milk. Additionally, he indicates that this foodstuff can also be called *pyríefthon*. Therefore, not only does the explanation provided by Pausanias define the term, but also it precisely reveals the production technology of the said foodstuff, by specifying it in a manner analogical to the approach taken by Galen[22]. Last but not least, it should be noticed that similar definitions of the words *pyríefthon/pyríefthos* and *pýos/pyós*, together with the production technology of the said foodstuff, were included in lexicons compiled by such

[17] Galen, *De alimentorum facultatibus*, 694, 10 – 695, 1, vol. VI.

[18] Galen, *De alimentorum facultatibus*, 694, 16–17, vol. VI (*pyriáte*); 694, 16, vol. VI (*pagén gála*).

[19] On the person, cf. E. Dickey, *Ancient Greek Scholarship. A Guide to Finding, Reading, and Understanding Scholia, Commentaries, Lexica, and Grammatical Treatises, from their Beginnings to the Byzantine Period*, Oxford–New York 2007, p. 88–90; S. Matthaios, *Greek...*, p. 288–290.

[20] Hesychius of Alexandria, pi, 4418, 1 (s.v. *pyriaton*).

[21] On Pausanias, cf. E. Dickey, *Ancient...*, p. 99; S. Matthaios, *Greek...*, p. 292–293.

[22] Pausanias, pi, 43, 1–2 (s.v. *pyón*).

authors as Photius (9th c. AD)[23], as well as in *The Suda* (Latin: *Liber Suda*; 10th c. AD)[24] and *Etymologicon magnum*[25].

As far as determining the appropriate meanings of the analysed terms is concerned, it is also crucial to scrutinise testimonies given by the ancient comic playwrights that Galen mentions while discussing methods used to coagulate milk. In this respect, informative material is provided in the form of an extract preserved by Athenaeus of Naucratis from Pherecrates' (5th c. BC)[26] comedy *Miners* (*Metalleís*). Notably, the comic playwright mentions *pýou tómoi*[27], i.e., 'pieces' or 'slices' of *pýos/pyós*, which unambiguously indicates that this was a solid type of food which could be divided into portions, e.g. cut with a knife. Since this noun could be synonymous with such terms as *pyriáte* and *pyríefthon/pyríefthos*, the latter must also have been used to describe the cheese obtained from curd produced by heating up milk.

What still remains to be determined is whether the terms *pýos/pyós*, *pyriáte* and *pyríefthon/pyríefthos* are truly synonymic. When it comes to differences and similarities between the meanings of the said individual nouns, the aforementioned lexicographic material recorded by Photius appears to be particularly useful, since the author states the term

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[23] P h o t i u s, *Lexicon*, pi, 1541 (s.v. *pyon*). Photius indicates that the term *pýon* may also mean a product obtained by boiling fresh milk with soured milk, i.e., a curd or fresh cheese. Cf. P h o t i u s, *Lexicon*, pi, 1542 (s.v. *pyon*). In the second entry, Photius adds that this product can also be called *pyríefthon*. Analogous data, cf. P h o t i u s, *Amphilochia*, 21, 121–126 (esp. 126). Photius writes exactly about the ambiguity of this term, and as its final meaning he nominates the one analogical to that described in the lexicon. On Photius and his writings, cf. D i c k e y, *Ancient...*, p. 101–104; F. P o n t a n i, *Scholarship in the Byzantine Empire (529–1453)*, [in:] *Brill's Companion to Ancient...*, p. 331–337.

[24] *Suda*, pi, 3179, 1–4 (esp. 2–3) (s.v. *pyos*). The author defines the term as, among other things, a product made by boiling fresh and soured milk. On the work cf. E. D i c k e y, *Ancient...*, p. 90–91; e a d e m, *The Sources of our Knowledge of Ancient Scholarship*, [in:] *Brill's Companion to Ancient...*, p. 472–473.

[25] *Etymologicon Magnum*, pi, 697, 4 (s.v. *pyos*). The author identifies the term as synonymous to curdled milk. He does not, however, specify the technology used to obtain this product. On *Etymologicon Magnum*, cf. E. D i c k e y, *Ancient...*, p. 91–92; R. T o s i, *Typology of Lexicographical Works*, [in:] *Brill's Companion to Ancient...*, p. 634.

[26] I.C. S t o r e y, *The First Poets of Old Comedy*, [in:] *The Oxford...*, p. 108–110.

[27] A t h e n a e u s o f N a u c r a t i s, VI, 269 a (96, 30).

pyón can be associated with several definitions. First of all, it can mean a liquid (that comes out of breasts and udders) prior to proper milk. Secondly, it can refer to transmogrified blood. Next, it can simply be used to describe milk in general. In addition, it could also refer to any milk-coloured liquid (and secretion). Finally, this word is also used to describe fresh milk boiled together with yesterday's milk, i.e., soured, and thus, it means cheese which has been made by means of the said technology. Photius certifies that the term is synonymous to the concept of *pyríefthon* (but, as one can presume, only in the last meaning).

To conclude our research, we also turn to the author of the scholia to *Vespae*. He, referring to Palamedes' (2nd/3rd c. AD)[28] authority, claims that the term *pyriáte* (or more precisely, *pyriátes*) is synonymous with the term *pyríefthon*[29], which means that it may have referred to cheese as well. It is also worth noting that the remark regarding the identical meaning of the nouns *pyriáte* and *pyríefthon* can also be found in Photius' lexicon[30].

The consequence of the reasoning presented above is the fact that *pyríeftha as* mentioned by Philippides cannot have been 'colostrum', as claimed by the author of the *Deipnosophistae,* but must have been cheese served together with pieces of flatbread called *lágana*. What is the cause of this considerable mistake made by such a food expert as Athenaeus of Naucratis?

2. Trying to fully understand Galen

As for the above question, through the analysis of the source material, we are able to prove that the author of the *Deipnosophistae* was not ignorant, but he was influenced by a text written by another prominent mind in the realm of dietetic research, i.e., Galen's *De alimentorum facultatibus*.

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[28] On Palamedes, cf. R. F ö r s t e r, *Eleatikos Palamēdēs*, RMP 30, 1875, p. 331–339; S. M a t t h a i o s, *Greek...*, p. 241.

[29] *Scholia in Aristophanis vespas*, 710 a, 1 – c, 1.

[30] P h o t i u s, *Lexicon*, pi, 1558 (s.v. *pyriatē*).

In Book III of the latter's work, more precisely in the extract devoted to soured milk, i.e., *oksýgala*[31], Galen writes about methods that lead to the precipitation of milk curd, i.e., *schísis*. The passage is written in a relatively complex manner and it has a composite structure, since it consists of two major parts. The first section is nothing more than a summary of the passage included within the treatise by Sextius Niger[32]. The second part is Galen's digression, following his reading of the text[33], containing some remarks on colostrum (to complement Niger's lecture)[34], a reference to Galen's general literary knowledge[35], his deliberations stemming from his own life experience (transposing the subject of his divagations into the body of words and terms he knew from his homeland)[36], and an indication of the effects resulting from the described process in the context of *materia medica*[37].

As for the contents of the passage, Galen writes that even though rennet is customarily used to curdle milk, the same effect can also be obtained by exposing milk to high temperatures and by adding cold *oksýmeli* or *oinómeli*. At times, it is also possible to curdle milk just by boiling milk and simultaneously immersing a vessel with extremely cold water inside it.

In his comment to the original text, Galen states that rennet is also used to curdle the milk obtained immediately after birth, especially if it is heated for a short period of time on wood charcoal. He also mentions that ancient comedy playwrights used to call this kind of curdled milk *pyriáte*, whereas in his times, in Asia Minor, this product was referred to as *pyríefthon/pyríefthos*. Galen recaps his divagations by stating that the final product[38] is, as a matter of fact, a pure milk curd without any

[31] G a l e n, *De alimentorum facultatibus*, 689, 8 – 696, 6, vol. VI.
[32] G a l e n, *De alimentorum facultatibus*, 694, 10–14, vol. VI.
[33] G a l e n, *De alimentorum facultatibus*, 694, 14 – 695, 1, vol. VI.
[34] G a l e n, *De alimentorum facultatibus*, 694, 14–15, vol. VI.
[35] G a l e n, *De alimentorum facultatibus*, 694, 16–17, vol. VI.
[36] G a l e n, *De alimentorum facultatibus*, 694, 17, vol. VI.
[37] G a l e n, *De alimentorum facultatibus*, 694, 17 – 695, 1, vol. VI.
[38] I.e. *pyriáte*, which is synonymous to *pyríefthon/pyríefthos*.

additive substances.

Galen's text, and particularly his comments on colostrum, caused some interpretative issues, since one could conclude he believed colostrum to be synonymous with two other terms: *pyriáte* and *pyríefthon*/*pyríefthos*. Nevertheless, Galen, who was then writing about the technology applied to produce milk curd, only pointed to the fact that colostrum curdles in no time when exposed to high temperature, and this technology (i.e., heating up milk) was also used in the production of cheese, which in comic poetry was called *pyriáte* and in Galen's time *pyríefthon*/*pyríefthos*. As a result, Galen only states the synonymousness of *pyriáte* and *pyríefthon*/*pyríefthos*, and never claims that cheese known by this name was made of colostrum

An example that illustrates the interpretative difficulties is *Iatricorum libri* by Aëtius of Amida. In Book II, within a lecture on milk and dairy products[39], following the chapter *Perí oksygálaktos*[40], the author placed another chapter, entitled *Perí protogálaktos Galenoú*[41], where he tries to specify the contents included in the original text by taking the following measures. Firstly, from the chapter within *De alimentorum facultatibus* entitled *Perí oksygálaktos*, he separates two, in his opinion, thematically connected pieces, i.e., one regarding soured milk and another on colostrum. Secondly, in order to guide the reader to his way of thinking, each piece is provided with an appropriate heading, clearly indicating the contents of the passage to follow. Thirdly, in the extract *Perí protogálaktos Galenoú*, he specifies Galen's words, by adding τὸ καλούμενον πρωτόγαλα... at the beginning, and then he also introduces καὶ prior to Galen's πυρωθὲν ἐπὶ θερμοσποδίας... In consequence, there is an impression that τοῦτο, used in the next sentence of Aëtius' text, refers to πρωτόγαλα, and not to τὸ γάλα πυρωθὲν..., and thus, it seems that this pronoun refers to colostrum, and not to the curd obtained after

[39] Aëtius of Amida, *Iatricorum libri*, II, 86, 1 – 104, 13. The chapter is a compilation of texts by Rufus of Ephesus and Galen.

[40] Aëtius of Amida, *Iatricorum libri*, II, 98, 1–15.

[41] Aëtius of Amida, *Iatricorum libri*, II, 99, 1–6.

heating it up. Striving to avoid ambiguity, Galen, however, specifies γάλα πυρωθέν by means of τὸ οὕτω παγὲν γάλα, as he believes that in this way he univocally points to the subject of his deliberations. As a result of the aforementioned measures, the reader of *Iatricorum libri* was provided with a slightly different message, which implied that Galen's aim had not been to describe the technology of producing milk curd, but to define the terms referring to colostrum. Moreover, the said modifications introduced by Aëtius of Amida could lead readers of his encyclopaedia to conclude that πρωτόγαλα as well as πυριάτη and πυρίεφθον were terms used to refer to colostrum.

Having proved that Galen's text was the basis of the mistake made by Aëtius of Amida, and having suggested its origins, we may now return to the *Deipnosophistae* and state that the erroneous explanation – provided by Athenaeus of Naucratis – of the term *pyríeftha* used in Philippides' comedy is, in its nature, identical to the one we can find within *Iatricorum libri* by Aëtius of Amida. Therefore, we can assume that the definition preserved in the *Deipnosophistae* and, considering the terms *pyríephtha* and *próton gála* to be synonymous, was also coined on the basis of the said fragment of Galen's *De alimentorum facultatibus*.

It is also worth noting that Galen is the very first person that we know of in the history of literature to put *pyriáte* and *pyríefthon/pyríefthos* together. Both in medical and lexicographic works, they only appear next to one another in texts written in Galen's time (Julius Pollux, Pausanias, Palamedes) and later (Oribasius[42], Aëtius of Amida, authors of scholia to the comedies of Aristophanes and Photius). Thus, it could be argued that all these compilations of the nouns *pyriáte* and *pyríefthon/pyríefthos* stem from the remarks which Galen included in *De alimentorum facultatibus* (and which were later taken into account by other lexicographers and medical doctors in their works).

[42] O r i b a s i u s, *Collectiones medicae*, II, 59, 10, 2 – 11, 1.

3. Consequences

Our hypothesis that Athenaeus of Naucratis was familiar with Galen's reflections which are included the treatise *De alimentorum facultatibus* has several effects. First of all, it renders it possible to determine the time when the *Deipnosophistae* was written. Since *De alimentorum facultatibus* is dated to between 180 and 182, which means that Book XIV, at the very least, of Athenaeus' work must have been written after that time.

Secondly, we believe that the fact that Galen is one of the banqueters named by Athenaeus and that the author from Naucratis manifestly refers to his output not only suggests that they were contemporaries in time and space, but also that the latter aimed to learn Galen's thoughts. Therefore, at some point between 182 and 216 (Galen's death), the two authors were very likely to have met, and thus our final conclusion in the matter is that Galen in the *Deipnosophistae* is not a purely a literary figure but a true representation of the prominent medic of Pergamum[43].

Thirdly, we suggest re-examining and correcting translations of all the belles lettres which contain the terms *pýon* (or *pýos* either *pyós*), *pyriáte* and *pyríefthon* (or *pyríefthos*), in order to apply their appropriate interpretation and meaning.

Finally, we would like to note that the aforementioned conclusions would not have been possible without directly linking the results of studies of medical sources with other types of literature. We are also convinced that we have proved without doubt that medical treatises may be useful not only in analysing the scope of the history of medicine, but also the history of ancient literature. We also hope that studies on medical writings will, in the future, allow us to explain other mysteries which today still pose a real challenge to scientists and scholars.

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[43] Our supposition seems to be supported by the latest research by Antoine Pietrobelli, who, although arguing that Athenaeus wrote his work in the first decades of the 3rd c. AD, also acknowledges the fact that at least part of it was penned *when Galen was still alive*, cf. A. P i e t r o b e l l i, *Galen's Early Reception (Second -Third Centuires)*, [in:] *Brill's Companion to the Reception of Galen*, eds. P. B o u r a s-V a l l i a n a t o s, B. Z i p s e r, Leiden–Boston 2019, p. 15.

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Final Conclusions

The sources discussed in this volume have been analysed with regard to the role of milk and milk products occupied in the dietetics, medicine and gastronomy of late antiquity and early Byzantium. It can be concluded that, due to their popularity in the Mediterranean Basin, the foodstuffs were of great interest to the medical circles of the day. It needs stressing that the essential framework of dietetic and *materia medica* knowledge concerning dairy had been developed by generations of Greek physicians over a relatively long timespan until it was given its final shape by Galen in the 2nd c. AD. The doctrine formulated in his treatises was embraced by the physicians of early Byzantium so earnestly that they did not venture beyond the canon nor did they contribute in any way to its further development.

As for milk, firstly, it needs stressing that in the Mediterranean region, unlike wine, milk never gained the status of a staple drink. Nevertheless, Greek physicians offered a detailed description of the influence the consumption of milk exerted on the functioning of the human body. In view of the material gathered, it can be maintained that physicians considered

milk to be a non-homogeneous substance which consisted of three elements, i.e. thick curd, watery whey and fat. At this point, it needs to be stressed that the data concerning the dietetic properties of milk found in medical treatises very often corresponds to the information provided by the agronomic literature of the day. Hence, it can be assumed that this kind of competence was relatively widespread in the period of interest, especially among villagers who depended on breeding animals. The experts in medicine as well as ancient and Byzantine agronomists were aware of the fact that the composition of milk varied depending on the species. Cow milk was considered the thickest, and therefore the most nutrient-rich, while sheep and goat milk followed. The consistency of the particular kind of milk also depended on the season. According to the writings, the best milk was obtained from healthy animals, neither too young nor too old. Milk became much thinner in spring, when animals fed on plants which, due to the frequent rains, absorbed the most moisture. Milk thickened in summer, when the rains subsided. Another factor that influenced the quality of milk was the type of feed given to animals, of which the inhabitants of the Mediterranean world were perfectly aware.

From the point of view of the producer, obtaining the thickest milk possible was the best option, as it was nutritious in itself and also constituted a perfect raw material for the production of cheese. However, the authors of medical texts pointed to the hazards of consuming milk with a high curd content on the grounds that it was conducive to blocking internal organs and generated kidney stones. Therefore, they recommended milk with a balanced content of thick and thin elements. Goat's milk can be assumed to have best met this criterion (and goats are considered to have been the most popular species of milk animals, followed by sheep and then cows). It has to be remembered that farmers were guided primarily by practical considerations, such as the possibility for herds to graze on mountain clearings and the lower costs of keeping the livestock (these criteria were fulfilled primarily by goats and then by sheep).

Medical treatises also provide information on how the problem of milk going sour, unavoidable in the hot Mediterranean climate, was commonly addressed. The physicians were aware of the fact that this

process not only had a negative influence on the taste of milk, but also modified the dietetic properties of the product. That is why they recommended drinking milk fresh from the animal; if this was not possible, they suggested prolonging its usability through bringing it to the boil and/or preserving it with salt or honey. It can be argued that in the Mediterranean region, high quality milk was a seasonal foodstuff (the best quality feed being available only in late spring and early summer), available primarily to the rural population (who had direct access to milk fresh from the animal) but not in large quantities. Hence, it can be assumed that in urban areas, fresh milk was a rare, and therefore, expensive delicacy. It is most probably for this reason that, in the source literature, milk was described as a foodstuff of mainly peasants and barbarians.

It can be inferred that the inhabitants of urban areas consumed milk that had already gone slightly sour. This might explain why milk was attributed to have had laxative properties and was considered harmful for the stomach and other parts of the digestive system. The same symptoms, however, can be also interpreted as revealing the widespread lactose intolerance in society of that time. The above factors, however, did not adversely affect the practice of drawing on the attributes of fresh milk in various therapeutic procedures. Due to its soothing properties, milk was used primarily in all kinds of therapies in which the internal or external application of non-invasive, soothing remedies, such as enemas and rinses, was necessary. Moreover, cognizant of the opposing effects that curd and whey had on the human body, physicians skilfully used one or the other in the treatment of digestive system disorders, e.g., when symptoms such as diarrhoea or constipation occurred. In the case of the latter, physicians recommended milk with a high whey content, which stimulated the intestines and facilitated defaecation. Patients who suffered from dysentery were, in turn, administered milk with a high curd content, which was obtained through boiling down whey.

As far as the heat treatment of milk is concerned, medical sources reflect certain aspects of the everyday life of the people in late antiquity and early Byzantium. The physicians adopted a practice which involved placing hot stones in a pot with milk (a similar method was

later developed using iron discs). Such a source of heat made the liquid grow warm evenly, as a consequence of which the risk of burning the milk was less than in the case of boiling it on a hearth, when frequent stirring was recommended so as to minimise the risk of burning. It also needs stressing that the above culinary technology can indirectly serve as a source of information about the quality of cooking pots in those times. It can be inferred that they had a rough surface, which often resulted in milk sticking to the walls, the residue of which was rather difficult to remove from the rough surface. Moreover, according to the sources, it was frequently recommended that milk be boiled in a new pot, which implies that the residue had a negative impact on the smell and taste of other products later prepared in the same pot. Such information leads us to believe that the price of pots was not high, as they were regularly replaced with new ones.

The analysed texts also provide ample information on the use of milk in culinary art. As mentioned above, it was a staple drink predominantly in rural areas, where it was said to have also been boiled into soups or pulps, with flour, groats, starch or *lágana*/*ítria*. However, due to the relatively small milk production of goats and sheep, the cereals mentioned above were generally firstly cooked in water and then a small amount of milk was added towards the very end of preparation. From the point of view of medicine, the meal thus obtained was not only cheap and nutritious, but it also effectively relieved the symptoms of dysentery. A more luxurious dish based on rice (expensive at the time) was prepared in a similar way. Milk also constituted an important ingredient of casserole-type dishes, marinades, sauces for meats and desserts.

In the light of the material gathered, a few basic facts concerning whey can be established. This liquid did not function as a foodstuff *sensu stricto*. It was recommended (having been separated from curdled milk) exclusively in therapies which were aimed at neutralising harmful humours in the human body or in cathartic procedures. Whey was also used in the production of some cheeses, similarly to modern practises.

Curdled milk, depending on the method of curdling, was called *oksýgala* or *schistón gála*. According to the medical treatises, the former name meant milk that curdled in a natural way (without

using additional substances but by means of natural fermentation), while the latter referred to curd obtained using culinary technologies based either on heat-processing or on adding rennet.

As for *oksýgala*, dietitians did not attribute any major health benefits to this foodstuff. What they emphasised, though, was the fact that soured milk, as a heavy food product, with strong cooling properties and a negative impact on the human body, was easily absorbed by people with a hot constitution. Not surprisingly then, the foodstuff was recommended as one of the elements of a healthy diet administered to patients with an increased temperature in certain organs. It needs to be pointed out, though, that in such therapies physicians preferred to recommend the consumption of other, light, foodstuffs which had cooling properties. Nevertheless, *oksýgala* had its supporters. Ancient and Byzantine texts show that *oksýgala* was not an unequivocal term, and could designate not only soured milk but also fresh cheese. The source literature provides information about the methods of preparing this kind of foodstuff as well as details about possible additional ingredients.

The source material informs us that curd was used mainly to produce cheese, which was a staple dairy product in classical and late antiquity. This was due to mainly practical considerations. Cheese production enabled the surplus milk to be used, and a nutrient-rich foodstuff to be obtained which did not require immediate consumption but could be stored for a relatively long time. Therefore cheese enjoyed great popularity and was in high demand. According to source materials, cheese was produced and consumed on a large scale in rural and urban areas of the entire Mediterranean basin. Goats were the prevalent domestic animals, therefore goat cheese was the most frequent type, but cheeses produced from sheep milk, cow milk and horse milk were also known. Different brands of cheese existed, which were often produced in accordance with local recipes. Depending on the ingredients used, as well as the production and preservation methods, they differed in taste, smell, fat content and consistency. According to the analysed texts, regional cheeses frequently enjoyed a good reputation among gourmands. They were known to have reached even far-flung areas, though with a corresponding increase in cost. This was possible thanks to the well-developed infrastructure, which enabled efficient

transport, and also thanks to the emergence of the demand for mature as well as fresh cheeses. These foodstuffs, often due to their exceptional taste, were rather expensive and therefore popular mainly with affluent customers. The less well-off had to make do with generic cheeses.

However, it needs to be highlighted that the affordable price of these cheaper options was not tantamount to inferior quality. In rural areas, the staple diet was based to a great extent on fresh, home-made quark, which was in line with the dietary recommendations of that day. Such foodstuffs were considered nutrient-rich but at the same time light; meaning they did not block internal organs, whereas mature cheeses contained a large amount of salt. This salt meant they could be exported as salt facilitated effective preservation, but on the other hand, it deprived cheeses of moisture, which made them hard and strong in flavour. Therefore, such cheeses were considered heavy, conducive to kidney stones as well as intensifying thirst. The freshness of cheese was a decisive factor behind its use in therapeutic procedures. Freshly produced cheeses had mild medicinal properties and could be applied directly on wounds. Medicaments based on mature cheese were considered powerful enough to be recommended as an effective remedy for arthritis.

Due to its great popularity and wide accessibility, cheese had various applications in culinary art. Depending on the needs and circumstances, it was served fresh, mature, raw, with or without additions (herbs, nuts or fruit), baked, boiled, fried or smoked. Thanks to the sources available, basic differences can be observed with regard to the frequency of cheese consumption as well as the most popular types and the amounts in which they were eaten in rural and urban areas. Although the product was easily available both cities and in the country, it can be assumed that, as was the case with milk, cheese (especially the quark type) was consumed in the highest quantities in rural areas. Farmers practised the craft of cheesemaking, therefore they had large quantities of fresh quark at their disposal, which, combined with herbs, constituted the main *ópson* of their daily diet. Eaten with bread (in the form of a spread or as an ingredient in the dough), it satisfied hunger and provided energy for hard work. In urban areas, a great variety of cheeses were offered, including expensive gourmet cheeses from distant regions. Most probably, mature

cheeses prevailed, which, owing to the high degree of hardness and high salt content, were most likely consumed in small quantities. It also needs stressing that affluent urban residents followed a more varied diet than their rural counterparts. They could afford other foodstuffs, e.g., meat, which was rarely the case with the inhabitants of rural areas. It can be inferred therefore that in urban areas the percentage of cheese in a diet was lower than in rural regions, although the amount of the product in absolute numbers could be the same or even higher. Generally, cheeses could also be used for flavouring other dishes, or serve as an ingredient of *haute cuisine* dishes, such as *kándaulos*, or as a basis of desserts. And it must not be forgotten that cheese was an important Lenten food among the clergy and Christian laity.

Butter was the least popular (or even marginal) dairy foodstuff. The lack of interest in this food was the result of centuries-long Mediterranean culinary tradition which was based on using olive oil. Butter was considered to be a poorer substitute, used mainly by barbaric peoples who inhabited colder areas and were not familiar with the cultivation of the olive tree. Despite this, the authors of the analysed medical texts demonstrate a relatively extensive knowledge of this foodstuff. They are aware of the fact that butter is made from the fat element of milk, the best being that obtained from cows. It is worth noting that (with regard to milk and milk products), this is the only case when the choice of the best milk for the production of butter depended on its physical properties, and not on the prevalence of a particular animal species (although butter made from sheep or goat milk was known, too).

The analysed sources also provide information on the methods of butter production. The data, however, does not come from either agronomic or culinary literature, which points to a limited demand for this foodstuff. References to butter production in the description of milk products can be found in the writings of Pliny as well as ancient and Byzantine physicians. While the former most probably wanted to draw his readers' attention to this slightly exotic foodstuff, the medical circles were interested mainly in the practical application of butter. Butter was commonly used in therapeutic procedures as a remedy contributing to the concoction of harmful humours and to the softening of calluses (and

swellings) of different aetiology. Owing to its consistency, butter was applied in a solid or liquid form, and due to its mild action, it was administered both externally and internally. In the latter case, non-salted butter was to be used, and the mention of salt denotes the way the fat was usually preserved. In the light of butter being considered primarily as an effective pharmaceutical, there is nothing unusual about the lack of specific data concerning its consumption, i.e., in other words, its use in culinary art. This lack of references to the dietary properties of butter in medical writings is indicative of the minimal butter consumption.

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A Glossary of Basic Greek Terminology

aióra (αἰώρα) – a medical procedure during which the patient was rocked
áleuron (ἄλευρον) – flour, especially that obtained from wheat
álfita (ἄλφιτα) – barley groats
ámylon (ἄμυλον) – starch
anthótyron (ἀνθότυρον), pl. *anthótyra* (ἀνθότυρα) – a type of whey cheese (cf. *apótyron*)
apótyron (ἀπότυρον), pl. *apótyra* (ἀπότυρα) – a type of whey cheese (cf. *anthótyron)*
ásthma (ἆσθμα) – asthma
bathysikós (βαθυσικός) – a type of cheese, Latin name *caseus Vatusicus*
bláchos tyrós (βλάχος τυρός) – cf. *vláchos tyrós*
boúprestis (βούπρηστις) – a type of beetle
boús (βοῦς) – a cow
boútyron (βούτυρον) – butter
cheirágra (χειράγρα) – arthritis of the hand, wrist or elbow
chlorós tyrós (χλωρὸς τυρός) – fresh cheese, quark (cf. *hapalós* [*tyrós*]; *oxygaláktinos*)
chóndros (χόνδρος) – wheat groats

chymós (χυμός), pl. *chymoí* (χυμοί) – an organic fluid, such as blood, yellow bile, black bile and phlegm
diaitetiké (διαιτητική) – dietetics: a branch of medical science concerned with the influence of the consumption of particular foodstuffs on the human body
diáklysma (διάκλυσμα) – a type of mouthwash (cf. *diakrátema*)
diakrátema (διακράτημα) – a type of mouthwash (cf. *diáklysma*)
dyskrasía (δυσκρασία) – humoral imbalance
dýspnoia (δύσπνοια) – a respiratory disorder
dzomós (ζωμός) – meat or vegetable stock, soup or sauce
élleigma (ἔλλειγμα) – a type of medicine, taken in small doses through licking
epideipnís (ἐπιδειπνίς), pl. *epideipnídes* (ἐπιδειπνίδες) – a snack
eriómenos (ἠριώμενος) – containing air (of Paphlagonian cheese)
eúchymos (εὔχυμος), pl. *eúchyma* (εὔχυμα) – having good juices, pl. foodstuffs with such properties
eukrasía (εὐκρασία) – humoral balance
fármakon (φάρμακον), pl. *fármaka* (φάρμακα) – a medicine
filiatroúntes (φιλιατροῦντες) – amateurs of medical art
filofármakos (φιλοφάρμακος) – an amateur pharmacist
ftheiríasis (φθειρίασις) – pediculosis
fthísis (φθίσις) – a condition manifested through permanent weight loss
gála (γάλα) – milk
galaktología iatriké (γαλακτολογία ἰατρική) – the medical science of milk, its properties and the use of milk as well as milk products
galaktopótas anér (γαλακτοπότας ἀνήρ) – a milk-drinker
haimodía (αἱμωδία) – hypersensitivity of the teeth
hapalós (*tyrós*) (ἁπαλός [τυρός]) – fresh cheese, quark (cf. *chlorós tyrós*, *oxygaláktinos*)
haplón fármakon (ἁπλὸν φάρμακόν), pl. *haplá fármaka* (ἁπλὰ φάρμακα) – a simple medicament
hédysma (ἥδυσμα), pl. *hedýsmata* (ἡδύσματα) – a dainty
héftho (ἕφθω) – to boil or cook
hippaké (ἱππακή) – mare milk cheese

hypópia (ὑπώπια) – a condition that manifests itself with dark circles under the eyes

hypótrimma (ὑπότριμμα), pl. *hypotrímmata* (ὑποτρίμματα) – a type of cheese-based sauce or relish (cf. *myttotón*)

ítria (ἴτρια) – flatbreads made from wheat flour (cf. *lágana*)

káchlekes (κάχληκες) – hot stones used to boil milk

kakochymía (κακοχυμία) – a humoral imbalance of a foodstuff manifested through its unpleasant smell or flavour.

kakóchymon (κακόχυμον), pl. *kakóchyma* (κακόχυμα) – a foodstuff tending to produce harmful humours in the human body

kándaulos (κάνδαυλος) – a well-known ancient dish, in which cheese was one of the ingredients

keroté (κηρωτή) – a type of ointment based on wax

koiliaké diáthesis (κοιλιακὴ διάθεσις) – colic

kollýrion (κολλύριον) – a type of multi-component medicament in the form of a powder; prior to application combined with, milk or egg white to obtain an ointment

kómmi (κόμμι) – acacia tree resin

kóthon (κώθων) – a drinking feast

kotýle (κοτύλη) – a unit of volume, approx. 0.27 l.

krásis (κρᾶσις) – a temperament; a set of individual features of behaviour due to a unique humoral composition

kýathos (κύαθος) – a unit of volume, approx. 0.045 l.

kyriaké tés apokréas (κυριακὴ τῆς ἀποκρέας) – the Sunday that marked the beginning of the period known as *tyriné* (cf. *tyriné*)

lágana (λάγανα) – a type of *ítria* (cf. *ítria*)

liparón (λιπαρόν) – fat, in this case, milk fat

melíkraton (μελίκρατον) – a mixture of water and honey

mélke (μέλκη) – a foodstuff from curdled milk, obtained with the use of an appropriate culinary technology (cf. *oksýgala*)

myttotón (μυττωτόν) – type of cheese-based sauce or relish (cf. *hypótrimma*)

ofthalmía (ὀφθαλμία) – an eye disorder

oinómeli (οἰνόμελι) – wine flavoured with honey

oksýgala (ὀξύγαλα) – curdled milk, where the curd was obtained as a result of fermentation (cf. *mélke*)
oksygaláktinos (ὀξυγαλάκτινος), pl. *oksygaláktinoi* (ὀξυγαλάκτινοι) – fresh cheese, quark (cf. *chlorós tyrós*, *hapalós tyrós*)
oksýmeli (ὀξύμελι) – a mixture of honey, vinegar and water
oksýs (ὀξύς) – acidic, sharp
ópson (ὄψον), pl. *ópsa* (ὄψα) – foods typically eaten with bread
or(r)ós (ὀρ[ρ]ός) – whey (cf. *tyrógala*)
orthópnoia (ὀρθόπνοια) – a respiratory system disorder
pagén gála (παγὲν γάλα) – set milk
pimelé (πιμελή) – liquid fat (cf. *stéar*)
próton gála (πρῶτον γάλα) – colostrum
psydrákion (ψυδράκιον), pl. *psydrákia* (ψυδράκια) – pustules
ptisáne (πτισάνη) – a barley soup ascribed with medicinal properties
pýr (πῦρ) – fire
pyróo (πυρόω) – to heat up over fire
pýon (πῦον) – quark; cottage cheese (cf. *pyón*; *pyós*; *pýos*)
pyón (πυόν) – quark; cottage cheese (cf. *pýon*; *pyós*; *pýos*)
pyós (πυός) – quark; cottage cheese (cf. *pýon*; *pyón*; *pýos*)
pýos (πύος) – quark; cottage cheese (cf. *pýon*; *pyón*; *pyós*)
pýou tómoi (πύου τόμοι) – pieces or slices of cheese
pyriáte (πυριάτη) – milk curd obtained through the heating of milk (without the addition of coagulants) (cf. *pyriátes*; *pyriatón*; *pyríefthon*; *pyríefthos*)
pyriátes (πυριάτης) – milk curd obtained through the heating of milk (without the addition of coagulants) (cf. *pyriáte*; *pyriatón*; *pyríefthon*; *pyríefthos*)
pyriatón (πυριατόν) – milk curd obtained through the heating of milk (without the addition of coagulants) (cf. *pyriáte*; *pyriátes*; *pyríefthon*; *pyríefthos*)
pyríefthon (πυρίεφθον), pl. *pyríephtha* (πυρίεφθα) – milk curd obtained through the heating of milk (without the addition of coagulants) (cf. *pyríate*; *pyriátes*; *pyriatón*; *pyríefthos*)
pyríefthos (πυρίεφθος) – milk curd obtained through the heating of milk (without the addition of coagulants) (cf. *pyríate*; *pyriátes*; *pyriatón*; *pyríefthon*)

schísis (σχίσις) – the process of milk curdling
schistón [*gála*] (σχιστὸν [γάλα]) – set milk
semídalis (σεμίδαλις) – durum wheat or durum wheat flour
sinapismós (σιναπισμός) – a therapeutic procedure which involved applying a mustard plaster
stéar (στέαρ) – solid fat (cf. *pimelé*)
tálaros (τάλαρος) – a wicker basket in which fresh cheese was placed to drain the whey
theleíai – oval-shaped cheese pats produced in Crete
trágos (τράγος) – spelt groats
trofalís (τροφαλίς) – a pat of cheese
tyrepsitós dzomós (τυρεψιτὸς ζωμός) – a cheese soup served during *tyriné*
tyriné (τυρινή) – in Byzantine tradition, the week preceding Lent when milk and dairy products were the Lenten food of the clergy and Christian laity (cf. *tyrofágos*)
tyródes (τυρῶδες) – curd
tyrofágos (τυροφάγος) – in Byzantine tradition, the week preceding Lent when milk and dairy products were the Lenten food of the clergy and Christian laity (cf. *tyriné*)
tyrógala (τυρόγαλα) – whey (cf. *or[r]ós*)
tyrós (τυρός), pl. *tyroí* (τυροί) – cheese
vláchos tyrós (βλάχος τυρός), pl. *vláchoi tyroí* (βλάχοι τυροί) – Vlach cheese (cf. *bláchos tyrós*)

List of Abbreviations

AAnth	American Anthropologist
AClas	Acta Classica
ADer	Archives of Dermatology
AThe	Acta Theologica: Supplementum
AHM	Archives of Hellenic Medicine/Αρχεία Ελληνικής Ιατρικής
AJHB	American Journal of Human Biology
AJNe	American Journal of Nephrology
AJPA	American Journal of Physical Anthropology
AMHA	Acta Medico-Historica Adriatica
ANRW	*Aufstieg und Niedergang der römischen Welt. Geschichte und Kultur Roms im Spiegel der neueren Forschung*, eds. H. Temporini, W. Haase, 1972–1998
APor	Antropologia Portuguesa
ARG	Annual Review of Genetics
Ath.AEH	Athena. Syngramma periodikon tes en Athenais Epistemonikes Hetaireias
AZoo	Anthropozoologica
BJHP	British Journal for the History of Philosophy
BMC.EB	BioMed Central. Evolutionary Biology
BNP	*Brill's New Pauly. Encyclopaedia of the Ancient World...*

Brit	Britannia: A Journal of Romano-British and Kindred Studies
BrLL	Bratislavske Lekarske Listy
BSA	Bulletin on Sumerian Agriculture
BSym	Byzantina Symmeikta
BZ	Byzantinische Zeitschrift
CA	Classical Antiquity
CC	Classica Cracoviensia
CJ	Classical Journal
CP	Classical Philology
CQ	Classical Quarterly
CSCA	California Studies in Classical Antiquity
DHA	Dialogues d'histoire ancienne
DOP	Dumbarton Oaks Papers
E	Eos. Commentarii Societatis Philologae Polonorum
EAACI	European Annals of Allergy and Clinical Immunology
EC	Les Études Classiques
EHR	English Historical Review
FH	Food & History
FP	Farmacja Polska
G	Gymnasium. Zeitschrift für Kultur der Antike und Humanistische Bildung
GR	Greece & Rome
GRBS	Greek, Roman, and Byzantine Studies
Gut	Gut. An International Journal of Gastroenterology and Hepatology
H	Hermes. Zeitschrift für klassische Philologie
HPs	History of Psychiatry
IDJ	International Dairy Journal
IJOa	International Journal of Osteoarchaeology
JAS.R	Journal of Archaeological Science: Reports
JEthn	Journal of Ethnopharmacology
JFSE	Journal of Food Science and Engineering
JHM	Journal of the History of Medicine and Allied Sciences
JHS	Journal of Hellenic Studies

JPGN	Journal of Pediatric Gastroenterology and Nutrition
JRSM	Journal of the Royal Society of Medicine
ŁSE	Łódzkie Studia Etnograficzne
Mn	Mnemosyne: a Journal of Classical Studies
NF	Nowy Filomata. Czasopismo poświęcone kulturze antycznej
NTe	Nova Tellus. Revista semestral del Centro de Estudios Clásicos
Nut	Nutrients. An open-access journal
Opus	Opuscula. Annual of the Swedish Institutes at Athens and Rome
PhH	Pharmacy in History
Phoe	Phoenix. Journal of the Classical Association of Canada/Revue de la Société canadienne des études classiques Phronesis. A Journal for Ancient Philosophy
PLoS.CB	Public Library of Science. Computational Biology
PNAS	Proceedings of the National Academy of Sciences of the United States of America
PNH	Przegląd Nauk Historycznych
PPAS.LES	Proceedings of the Pakistan Academy of Sciences: Pakistan Academy of Sciences: B. Life and Environmental Sciences
PTRS.BS	Philosophical Transactions of the Royal Society B: Biological Sciences
RE	*Paulys Realencyclopädie der classischen Altertumswissenschaft*, eds. G. W i s s o w a, W. K r o l l, Stuttgart 1894–1978
REG	Revue des Études Grecques
RHis	Res Historica
RMP	Rheinisches Museum für Philologie
SCer	Studia Ceranea. Journal of the Waldemar Ceran Research Centre for the History and Culture of the Mediterranean Area and South-East Europe
ScM	Scientific Monthly
SIFC	Studi Italiani di Filologia Classica
SuA	Sudhoffs Archiv. Zeitschrift für Wissenschaftsgeschichte (1929–1933 Sudhoffs Archiv für Geschichte der Medizin; 1934–1965 Sudhoffs Archiv für Geschichte der Medizin und der Naturwissenschaften)

VP	Vox Patrum. Antyk Chrześcijański
WJS	World Journal of Surgery
ZW	Zeszyty Wiejskie

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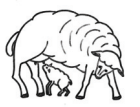

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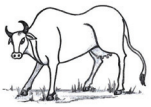

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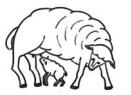

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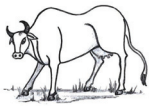
Abbreviations:
dist. district, **ethn.** ethnic group, people, tribe, **mtn.** mountain(s), mountain range, **ctry.** country, land, state, region, **cty.** city, town, **pen.** peninsula, **isl.** island

Modern city names have been written in brackets.



Abstract

The present publication is the result of research into the diets, dietetics, pharmacology and gastronomy of antiquity and early Byzantium, based prevailingly on Greek medical treatises composed during the period from the 1st to the 7th c. AD. It is a broad subject, and while in this volume the focus is on milk and milk-based products, the research should be viewed through the context of our previous undertakings and is an addition to our studies into cereals, legumes, vegetables, meat and animal products.

The book focuses on the teachings of Galen of Pergamum, which are juxtaposed with the writings of his predecessors, i.e., Celsus and Dioscorides, and of those who penned their works posterior to his lifetime, namely Oribasius, Aëtius of Amida, Anthimus, Paul of Aegina and the anonymous author of the treatise *De cibis*. These medical sources were supplemented with thematically related non-medical literature (agronomical, encyclopaedic, lexicographic, and belles lettres) in both Greek as well as Latin, serving to paint a fuller picture of the topic. The material was then used to trace and demonstrate the centuries-long process

of the Eastern dietetic-pharmacological theory and practice concerning milk and dairy products, a theory which gradually permeated the entire Mediterranean world, becoming one universal medical doctrine. We coined the term 'galactology' for the theory on milk and its derivatives.

The present study begins with a short introduction which outlines the role the above foods played in the Mediterranean region and is followed by a chapter which discusses the origin of the medical theory on milk. The subsequent parts of the volume have been organised thematically, and they discuss the dietetics of dairy, its *materia medica*, examples of uses in medical procedures and culinary data on milk and its derivatives. The appendix deviates from the above pattern of organizing the material and shows how medical treatises may be useful when analysing ancient literature.

Keywords: History of medicine in antiquity and Byzantium; history of medical literature in antiquity and Byzantium; history of food in antiquity and Byzantium; history of culinary literature in antiquity and Byzantium; milk; soured milk; cheese; butter; dairy products

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