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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].

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*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).

Zofia Rzeźnicka, Maciej Kokoszko

## 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.