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Milk: Nutritious and Dangerous

Ken Albala

In Western medical and dietary thought there is probably no food about which more contradiction and confusion has been generated than milk. On the one hand, it is obviously among the most nutritious substances. Mother's milk is the first food of infants and supplies them with all the necessary nutrients to sustain life. By logical analogy, animal milk should also be an appropriate food for humans of all ages. But on the other hand, an overriding obsession with putrefaction and fear of foods categorized humorally as cold and moist makes milk one of the more dangerous aliments. Deciding who should use milk, and in what context, thus became a major preoccupation among medical theorists in Western cultures.

Few other cultures have such difficulty deciding how to use milk, because few cultures think of milk as food for adults. The high incidence of lactose intolerance among many Asian peoples, Africans and native Americans is good evidence that these people historically had never made regular use of milk, and had never adapted biologically to digest it efficiently. In these cultures milk remained solely a food for children.

The situation was quite different in the West where cattle had been domesticated for around 10,000 years. This is confirmed not only archaeologically, but in the appearance of diseases associated with living in close proximity to cattle, for example small pox, measles and tuberculosis, which are probably mutated forms of animal pathogens.¹

After many generations of using milk, with the gradual culling of the gene pool of those individuals with intolerance, the population would have evolved the ability to manufacture lactase into adulthood. Lactase is the enzyme that breaks down the sugar lactose; infants and children produce an abundance of it, but adults generally do not. Thus, Western cultures, and especially Northern Europeans, acquired the ability to consume milk in greater quantities without discomfort. This was, of course, biologically a relatively recent phenomenon.

That this process had not been complete, even by the time of classical antiquity, is evident in the comments of the Hippocratic authors and Galen. The Hippocratic books on *Regimen* mention milk only in the context of cheese, which 'is nourishing because the fleshy part of the milk remains in it'.² But the author does not suggest that milk should be a regular food. It usually only appears in medical compounds designed to cool and moisten the body, such

as oxygala (oxygalacte or soured buttermilk). As an especially phlegmatic food according to humoral theory, it would also be dangerous in colder seasons, tending to throw off the internal balance of humours in the body and giving rise to numerable diseases associated with phlegm, such as rheums and catarrh, or what we would call a cold. A few centuries later, and with the full elaboration of the humoral theory by Galen of Pergamum, the pre-eminent physician of the Roman world, milk is clearly described as a dangerous food. In his *De alimentorum facultatibus*, Galen points out not only the abundant humidity which tends to corrupt within the body, but also the crass substance of milk's solid parts, and their tendency to obstruct the liver and cause kidney stones. Moreover, he comments that milk often causes flatus, which is a possible indication that much of the population was still lactose intolerant to some extent.³

In the classical world, fresh milk consumption was also associated with barbarity. As a simple natural food unimproved by art, it would be particularly appropriate for uncivilized nations, and may even have been suitable in past ages when people were more accustomed to living directly off the natural products of the earth. But for civilized peoples, a more civilized food is required. Milk must be made into cheese, grape juice must be fermented, olives preserved, and bread leavened. According to classical ideas, then, people gradually lost the ability to consume milk in adulthood, as their digestive systems became weaker and more delicate.

Of course the association of milk consumption with barbarians, and especially Northern Europeans, had a great deal to do with the fact that in hotter regions milk spoils very easily and must be made into cheese. In cheese, particularly when aged, lactose breaks down. Thus people around the Mediterranean and Middle East, who regularly consumed cheese rather than milk, would have retained lactose intolerance. In the North, and in mountainous regions, it could be consumed fresh, which is probably why lactose intolerance is to this very day a rarity in the north.

Despite this fact, it was classical nutritional theory that was inherited by medieval and early modern Europeans, first by way of Arabic interpreters such as Avicenna and Rhazes, but later via Galen and Hippocrates directly. What this means is that Europe accepted as orthodoxy a medical theory which extolled the importance of milk to the human species, but retained a serious ambivalence about how it should be used by adults. This central tension would only be accentuated when classical theory was inherited by Northern Europeans who were, by and large, well adapted to consume milk and would have to resort to more forceful arguments to dissuade their readers from using it. The example of milk thus provides a model of interaction and tension between material and cultural factors that influence food choices. That is, even among

peoples who could freely consume milk, the fear wrought upon their consciences by physicians remained.

Despite turgid warnings, milk always forms a central part of all discussions of nutrition. According to theory, those substances which are most similar to the human body are most easily embraced, assimilated and incorporated into the flesh. Flesh itself, therefore receives pride of place in this theory. But so too does blood, since food must first be broken down and converted into blood in the liver before assimilation can take place. Only one step removed from blood, milk too is a powerfully nourishing substance. It is, in fact 'twice concocted' blood manufactured in the mammary glands from blood itself. It thus carries all the nutrients originally consumed by the mother in a highly refined form. At this stage, however, it has been deprived of much of its natural heat in nourishing the mother, and becomes a cold and moist aliment. It is ideally suited for nourishing infants who were also said to be relatively cold and moist humorally. But in youth, when the complexion becomes hot and moist, milk is no longer suitable, and in hotter and drier adult bodies, milk presents numerous difficulties

This theory was obviously designed to explain what were first probably empirically gathered observations. Infants have an easier time digesting milk than adults. Nature designed milk for specific ends, and provided the ideally suited aliment for infants, but taken out of context it poses problems for adults. This kind of teleological reasoning is found throughout Galenic thought, as well as in Aristotle, and was only accentuated when these ideas were grafted onto the Judeo-Christian idea of a purposeful and well-planned creation. It makes perfect sense that infants, who have no teeth, should be provided with liquid nourishment.

What is even more curious though, is that although milk remained indexed for adults, it was specifically recommended for the aged and infirm. The process of ageing was described as the gradual burning down of the radical moisture and vital heat in the body, much like a lamp running out of fuel. As the body ages it thus grows colder and drier. But often in the very old an accidental accumulation of phlegm alters the natural course of events and the complexion becomes accidentally cold and moist, and the digestive powers become weaker and unable to deal with solid foods.⁴ Milk once again becomes an appropriate food for the aged, exactly as it was for infants – because old people are also often without teeth, nature again supplies the appropriate aliment.⁵ Old age was often compared to a second infancy, not merely mentally, but physiologically. In this case it is theory alone that informs food use. Just as hot and moist wine, another analogue of blood, is appropriate and nourishing for adults, cold and moist milk is similar to, and suitable for, very elderly bodies.

The real difficulty with this idea, however, was deciding exactly when the aged body is healthy, and when distempered. For while foods similar to one's complexion nourish in health, opposites correct in infirmity. An excessively cold and moist body would only be pushed to pathological extremes by cold and moist foods, and in this case a hot and dry food would logically act as a corrective. Hot and dry spices and wines would be far more suitable than milk. Therefore milk does make sense as a nourishment for the aged, but not as a medicinal food. Why then many dietary writers remark that milk should only be used as medicine remains problematic. The malleability of this theory obviously leaves wide room for disagreement and confusion.

Apart from these irregular uses for milk, the real controversy surrounds the use of milk by adults. The predominant fear, as has been mentioned, was putrefaction. Exactly as milk goes sour and curdles outside the body, it can also corrupt when exposed to the digestive heat of the stomach. No doubt the prevailing metaphor of the stomach as a pot whose seething contents rest on the flame of the liver, also suggested that milk can scald and easily burn. Should this happen, sooty vapours rise into the head, and the chalky deposits left by separation and burning would also be forced into the veins, accumulating in the kidneys as stones. Faulty processing of milk thus has resounding negative effects throughout the entire system.

This is why it was always recommended to drink milk on an empty stomach, and never after other foods, because by the time the first food is thoroughly 'concocted' the milk will already have spoiled.⁶ Spanish physician Francisco Nuñez de Oria suggests that it is specifically nobles and grandees who err on this very point, eating milk products at the end of a meal, and thereby ruining their digestion.⁷ Because of its cold and lubricating nature, milk can also draw other foods down to the bottom of the stomach before being completely digested.⁸ This still 'raw' chyle would pass into the liver, bloodstream and eventually the entire body, and never being properly refined, would also never be assimilated into the body, thus offering no nutritive value whatsoever.

Even more dangerous, according to some authors, was to drink wine in the same meal with milk. Together they coagulate, and can lead to strangulation, once the crass substance makes its way through the bloodstream toward the heart and lungs.⁹ For this same reason, abstaining from all other meats when drinking milk is recommended, as is avoiding exercise. Violently shaking the stomach contents can accidentally separate the different parts of milk, hastening their corruption.¹⁰ After milk one should remain perfectly still and upright.

Several authors also suggest that many individuals have a particular aversion to milk, and for such people it can even be venomous.¹¹ They cite the immediate gag response, and point out that many phlegmy foods cause nausea and

loathing. This is a good indication that they are unsuitable for our constitutions, and can never offer suitable nourishment.

Nonetheless, if one can avoid these numerous dangers, milk is still a very nourishing food. The fifteenth-century authority on dairy products, Pantaleone da Confienza, points to some earlier confusion about its specific qualities. As a nourishing food, logically it should be hot and moist: and the sweet flavour of milk is an indication that it should be categorized among the blood-promoting foods. This makes perfect sense, since milk is itself generated from blood. Moffet even called it 'white blood'. But by the authority of Galen, milk is a cold and moist food, watery and tending to increase phlegm in the body. Faced with this contradiction, the Arabic author Rhazes declared milk to be temperate humorally. Avicenna corrected his predecessor by explaining that blood is indeed hot and moist, but after nourishing the body of the mother it emerges in the form of milk as cold and moist, but retaining the elements suitable for nourishing infants.¹²

This confusion seems, however, to have persisted in Western nutritional literature, because one of the most frequent uses cited by medical authors for milk was to counteract melancholy. It would indeed moisten the dry body, but its cold qualities would only damage the already cold melancholic, particularly since such people are already prone to generate phlegm accidentally. Thus when Marsilio Ficino recommends all milky foods to combat melancholy, he is bending the logic of humoral correction.¹³ And many authors followed him in this prescription. Take, for example, Andrew Boorde, who claims that milk is not good for the sanguine, but good for melancholics, old men and children. His countryman Thomas Cogan recommends it specifically for students, for whom melancholia is a 'common calamity'.¹⁴ This opinion runs counter to most physician's advice that milk is particularly harmful for students because it offends the head and eyes.¹⁵

One of the only authors who seems to have thought out logically exactly which complexion should use milk was Antonius Gazius. He specified that milk is definitely not for phlegmatics, but is really well suited for adolescents and hot and dry bodies who would be moderately corrected by a cold and moist food. The only real danger here is that in excessively choleric bodies the milk may burn up and turn acidic, exactly as it would in a pot. But at least he thinks out the humoral logic thoroughly.¹⁶ What a confused reader might have thought about all this contradiction one can only guess, but it may well have ended in despair of ever being able to follow the physician's advice.

There is no less confusion within dietary literature about what kind of milk is best to use. Some prefer goat's milk, others cow. The only point of agreement on this topic is that human milk, because closest to the human body itself, is

most easily assimilated, and therefore the most nourishing. Hiring a wet-nurse for infants was obviously a common practice for wealthier households, but finding willing subjects for adults must have posed greater problems, especially since all doctors insist that milk be imbibed at the source. Platina suggests that milk from a healthy, beautiful, young woman of temperate complexion is best.¹⁷ Platina was the Vatican's first librarian, and one can easily imagine the long line of clerics waiting for the cure. In fact, he suggests that human milk should only be used in small quantities for medicinal purposes, implying that some people would have preferred to use it as regular food.

That it was in fact used frequently is evident from numerous comments throughout the literature. For example, Thomas Cogan remarks, 'Common experience prooveth that Womans mylke sucked from the brest, is without comparison best of all in a consumption'.¹⁸ He also notes that the old Earl of Cumberland was cured this way and afterward engendered the present Earl, who was George Clifford, one of Queen Elizabeth's favourites. Of course, as with choosing wet-nurses, one had to be very circumspect regarding the character and habits of the donor. These are passed on directly into the humours of the consumer, and materially alter the emotions. The great medical humanist John Caius was to learn this first hand. 'What made Dr. Cajus in his last sickness so peevish and so full of frets at Cambridge when he suckt one women (whom I spare to name) froward of condition and of bad diet; and contrariwise so quiet and well, when he suckt another of contrary disposition? verily the diversity of their milks and conditions, which being contrary one to the other, wrought also in him that suckt them contrary effects.'¹⁹

Comparable medical advice is also offered by Ficino, 'Choose a young girl who is healthy, beautiful, cheerful and temperate, and when you are hungry and the Moon is waxing, suck her milk; immediately eat a little powder of sweet fennel mixed with sugar. The sugar will prevent the milk from curdling and putrefying in the stomach; and the fennel, since it is a fine friend of the milk, will spread the milk to the bodily parts.'²⁰ Note, he too emphasizes a cheery disposition. In one of the more bizarre and gruesome passages in the dietary literature, Ficino also suggests that in lieu of a girl, the blood of a young boy will suffice.

For those content to use animal milk, the dietary literature also abounds in contradiction. To begin with, it was considered important to understand the relationship of the various components of fresh milk. The buttery parts were usually considered hot and moist qualitatively, while the parts that are solid and cheesy are cold and dry, and most importantly in substance and texture are crass, earthy and difficult to digest on their own. The qualities of the watery part, or whey, were a matter of debate. Because whey is clearly nourishing on

its own, the Arabic authority Mesue concluded that it is hot and moist. Avicenna's rejoinder placed it in the cold and humid category, which he argued, makes milk relatively tempered, because all three opposing components tend to balance each other out. Nonetheless, since the watery part predominates quantitatively, milk is ultimately a cold and moist food in total.²¹

The three components of milk could also be described in Paracelsian terms. The butterfat corresponds to the sulphurous element and is associated with flame, the cheese is saline comprising the earthy part, and the whey is mercurial. This scheme actually just substitutes chemical terms for older humoral ones, and obviously involves no actual chemical analysis.²²

All this was of central importance in appraising the merits of milk from different animals, because clearly some contain a greater proportion of fat, and others are more serous and watery. Maimonides considered pig's milk to be best because of the animal's anatomical similarity to humans.²³ How the Jewish philosopher was able to test his theory, one can only guess. Most authors do agree that cow's milk contains the greatest proportion of fat and is therefore the most nourishing. Goat's milk is the most watery, and sheep's milk lies somewhere between the two. Deciding which of these is best for drinking fresh is less clear though. For robust bodies who are able to digest crass foods, cow's milk would be preferable. For delicate bodies goat's milk, even though less nourishing, is superior. Typically, this rationale is left unexplained though, so in some authors there is a simple statement claiming that goat's milk is always best, and cow's worst. For example, Hugo Fridaevallis offers a jingle to remember: 'Quod praestat? Caprae. post? ovis. inde? bovis.' (What's best? Goat. After? Sheep. Next? Cow.)²⁴ In other authors, exactly the opposite claim is made. Baldassare Pisanelli ranks them in the following order: human, cow, sheep, goat and lastly buffalo.²⁵ Many authors, following their Greek and Arabic sources, also mention ass's milk which is the most serous of all and is used to treat dry and emaciated bodies.²⁶ Averroës even claimed that next to human milk, ass's is best. Some authors also mention mare's milk and camel's milk, though few presumably had the opportunity to try the latter. Both were considered extremely watery and dangerously cold. At any rate, the subject is again fraught with controversy.

Apart from the differences among species, the dietary authors are also surprisingly attentive to the importance of quality pasturage, and even the mood of the animal. In a passage that has a remarkably modern ring to it, Pantaleone insists that happier cows produce more and better milk.²⁷ A cheery disposition actually warms the milk, tending to render it more temperate and nutritious than milk produced by melancholy cows. According to the Greek Aëtius, animals fed on lowland pastures and near water tend to be colder and moister.

Mountainous pastures are far preferable, and milk from such animals is converted more quickly in the body to laudable blood.²⁸ The mountainous herbs, being well aerated and warmed by the sun, are better suited for conversion into warm humours in the animal's body, and hence the milk they produce is also more tempered. Only mountainous regions, especially in the north, that are too cold are unsuitable for dairy herds. Milk produced in the spring tends to be more nourishing than other seasons as well because the animals themselves are better nourished.²⁹ Animals that are well exercised also produce warmer and better quality milk. All these considerations are obviously meant to counteract the naturally cold and moist faults inherent in milk.

For the very same reason, milk from younger animals was thought to be hotter and moister. Pantaleone even goes so far as to suggest that certain outward signs offer clues about the humoral make-up of the animal, just as in the art of physiognomy a person's character and complexion can be judged by the face, body size, and hair colour. White cattle tend to produce colder and more humid milk which is less nourishing. Milk from black cattle is naturally hotter. Red or brown cows and goats produce more tempered milk.³⁰ Larger animals tend to be fatter, and are thus more humid than small muscular ones. The odour of an animal's flesh can also be taken as an indication of the milk they produce. Pantaleone considers the milk of dogs, wolves and bears fetid for this very reason. Pigs, because they are such voracious and indiscriminate eaters, produce equally foul milk.³¹

Another major topic of concern was a proper way to correct milk's dangerous qualities, tempering it with hot and dry condiments to make it more suitable for human consumption. Following Galen, the most typical correction recommended was salt, sugar and mint. According to Gazius, the salt or honey is added to prevent coagulation. Salt also makes it descend quicker and as a preservative it helps the milk to be properly processed before putrefaction sets in.³² Buttes counsels his readers that 'a litle afore you take it, put into it some salt, sugar, or hony, least it curdle in the stomacke'. This also renders the milk moist and temperately hot.³³ What is strange, however, is that often all of these correctives are recommended together. Sugar or honey alone appears to have been the preferred correction among nobles or at least that was the impression of Giorgius Pictorius,³⁴ but only one author, Menapius, suggests that salt ruins the flavour.³⁵ A far more thorough corrective was suggested by Paul of Aegina, and would have much the same effect as pasteurization: the milk should first be boiled with an easy fire, then seethed on a hotter fire. The milk should then be skimmed and any burned bits on the vessel should be sponged away. Lastly salt and sugar are added.³⁶ Tobias Venner takes this correction one step further by adding pepper as well.³⁷ Another common corrective was to cook the milk

with millet or rice, which absorbs the superfluous humidity and thus reduces the tendency to cause gas, although it does also becomes harder to digest prepared this way.³⁸ As a particularly gross food, this kind of porridge can easily clog the body's passages causing kidney stones.

Other preventative measures might also be taken to avoid the dangers of milk. Frequently, dietary writers recommend that after drinking milk one should carefully wash out the mouth with wine or brush the teeth. For reasons which are not entirely clear, milk was thought to damage the teeth and gums.³⁹ Of course this runs counter to the modern idea that calcium is especially good for teeth and bones. The apprehension in this case appears to have been a concern that corrosive residues left in the mouth might rot and loosen the teeth. Venner, once again, takes extra precautions and warns his readers to gargle with wine or strong beer and rub the teeth thoroughly after using milk.⁴⁰

Far more perplexing are two sets of recommendations which seem to be completely opposed. On one hand, there are often admonitions against using milk for people prone to headaches. Vaughan cites a common saying: 'Dare lac aut vinum febricitantibus et capite dolentibus, est dare venenum.'⁴¹ (To give milk or wine to the feverish and headache prone is to give venom.) This makes perfect sense. In such a hot body, the milk would burn and send noxious fumes into the head. Presumably following this same logic, Hollings warns all studious people to avoid milk because it harms the head and eyes.⁴² On the other hand, many authors say that milk is very good for the brain and eyes, and even for augmenting sperm production in men. The logic here is that a similarity of substance facilitates conversion. As Grataroli explains, 'In milke and egges there is great abundance of fat and clammy moisture, the one appropriate to aliment and nouriture, the other to sperm or seede of generation.' He continues that milk is also especially good for the brain, and is thought to increase its volume marvellously. Thus milk is good for students. Similar comments are found throughout the literature.⁴³ While a distinction can be drawn initially between headaches and those hoping to increase brain size, after popularization and simplification these comments seem completely contrary. Once again, a lack of precision and consistency among the medical authorities probably left the reading public hopelessly confused.

In conclusion, although milk is cited in Western dietary theory as among the most nutritious foods, the strident warnings and numerous variables and conditions under which it should be consumed, probably left serious readers petrified for their lives at the very thought of drinking milk. Or, as is just as likely, those accustomed to it probably went on blithely ignoring the medical advice. That this was the case is evident from a few very interesting comments within the dietary literature. Spanish-born Ludovicus Nonnius, displaced in

the Spanish Netherlands, remarks that 'in our age many Northerners consider milk a delicacy, as the Belgian people can abundantly testify'.⁴⁴ He seems to have found this strange and worthy of note. Similarly, Frenchman Charles Estienne associated milk drinking with the Scots and Irish and attributes their ferocity to this fact. Alsatian Melchior Sebizius thought milk drinking a peculiarity of the Swiss and Dutch.⁴⁵ The same distinction that opened this paper serves as its conclusion. Certain Northern European peoples, with acquired lactose tolerance, remained impervious to medical warnings. In the South, and even in England, authors were extremely ambivalent, and a certain proportion of lactose intolerance among these populations probably lent empirical support to theories inherited from antiquity. As these ideas were elaborated over centuries and eventually popularized, even corrupted over time, the confusion generated left milk with a reputation for danger. It may be no coincidence that milk drinking among adults remains a rarity in Southern Europe to this day.

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- ¹ Jared Diamond, *Guns, Germs and Steel* (New York: W.W. Norton, 1997), pp. 195–214.
- ² Hippocrates, *Regimen II. LI*, in *Hippocrates*, vol. IV, translated by W.H.S. Jones (Cambridge, MA: Harvard University Press, 1967), p. 325.
- ³ Galen, *De alimentorum facultatibus*, in *Opera omnia*, vol. VI, edited by C.G. Kuhn (Hildesheim: Georg Olms Verlagsbuchhandlung, 1965), pp. 681–689.
- ⁴ According to the Hippocratic *Regimen*, the last age of life was cold and moist and requires corrective hot and dry foods. In Galenic texts, following Aristotle, the body naturally grows colder and drier and requires hot and moist foods, but accidentally may become cold and moist and is then corrected with hot and dry ones. In either case it is not entirely clear why milk, which is cold and moist, would be a suitable corrective. See Richard Palmer, 'Health, Hygiene and Longevity' in *History of Hygiene*, edited by Yosio Kawakita, Shizu Sakai and Yasuo Otsuka (Ishiyaku EuroAmerica: 1991); Peter H. Niebyl 'Old Age, Fever, and the Lamp Metaphor' in *Journal of the History of Medicine*, Oct. 1971, pp. 351–368; Thomas S. Hall, 'Life, Death and the Radical Moisture' in *Clio Medica*, vol. 6, 1971, pp. 3–23.
- ⁵ Thomas Moffett, *Health's Improvement* (London: Thomas Newcomb, 1655), p. 124. Commenting that milk is bad for the teeth: 'there is no greater enemy to them then milk itself, which therefore nature hath chiefly ordained for them, who never had or have lost their teeth.'
- ⁶ Melchior Sebizius, *De alimentorum facultatibus* (Strasbourg: Joannis Phillipi Mulbii & Josiae Stedellii, 1650), p. 701.
- ⁷ Francisco Nuñez de Oria, *Regimiento y aviso de sanidad* (Medina del Campo: Francisco del Canto, 1586), p. 162. Condemning continual use of milk and all things made from milk, he specifies 'y mucho hierran los nobles y grandes en las comer, especialmente comiendo las tales viandas a la postre de otros manjares'.
- ⁸ Bartolomeo Sacchi, called Platina, *De honesta voluptate*, edited and translated by Mary Ella Milham (Tempe, Arizona: Medieval and Renaissance Texts and Studies, 1998), pp. 158 and 159.

⁹ Sebizius, p. 701. Antonius Gazius, *Corona florida medicinae* (Venice: Ioannes & Gregorius de Gregoriis, 1491), fol. hvi. ‘... nec etiam post ipsum bibatur vinum quam alterat ipsum et coagulat et penetrare facit indigestum ut iuniores medici sentire videntur.’

¹⁰ Thomas Elyot, *The Castel of Helthe* (New York: Scholars Facsimile Reprints, 1937), p. 34; Symphorien Champier, *Rosa Gallica* (Paris: Iodoco Badio, 1518), fol. LVIII. According to Symphorien, Avicenna recommended rest after drinking milk, but never sleep. The stomach contents must remain upright to digest this particularly dangerous food.

¹¹ Ioannes Domenico Sala, *De alimentis* (Padua: Ioannes Baptista Martinum, 1628), p. 129. ‘Multos autem videmus, qui singulari quadam proprietate ita a quibusdam alimentis abhorrent, ut perinde ab ipsorum esu laedantur atque a venenis laethalibus, aliqui a caseo, alii a lacte...’; Moffett, p. 124, if one naturally loathes milk, ‘it cannot possibly give him good nourishment but perhaps very much hurt in offending nature’.

¹² Pantaleone da Confienza, *Summa lacticiniorum* (Lyon: Antonium Blanchard, 1525), fol. XVI. The first edition of this work appeared in Turin in 1477, where Pantaleone was physician to the Duke of Savoy. This was a region in which understanding the medical use of milk products would have been especially in demand.

¹³ Marsilio Ficino, *Three Books on Life*, edited and translated by Carole V. Kaske and John R. Clark (Binghamton, NY: Medieval and Renaissance Texts and Studies, 1989), pp. 134 and 135. He also suggests that ‘It is especially good to drink milk mixed with sugar on an empty stomach, provided the stomach can tolerate it. These moist things are of great advantage to melancholics...’ This, at least, is a more moderate compound, the milk being tempered by the sugar. Ficino, p. 159.

¹⁴ Andrew Boorde, *The wisdom of Andrew Boorde*, edited by Edmund Pool (Leicester, Edgar Backus, 1936), pp. 46 and 50 where he specifies cow’s milk for melancholics; Thomas Cogan, *The Haven of Health, Chiefly made for the comfort of students* (London: Thomas Orwin, 1589), p. 154.

¹⁵ Edmund Hollings, *De salubri studiosorum victu* (Ingolstadt: Typis Ederianus, per Anream Angermarium, 1602), p. 35. Both Cogan and Hollings writing on the exact same topic offer completely opposite advice.

¹⁶ Gazius, fol. hv^o.

¹⁷ Platina, *Le grand cuisinier de B. Platine de Cremonne*, translated by M. Desdier Christol (Paris: Jean Ruelle, 1586), p. 38.

¹⁸ Cogan, p. 154.

¹⁹ From Moffett, as cited by Waverly Root, *Food* (New York: Simon and Schuster, 1980), p. 258.

²⁰ Ficino, p. 197.

²¹ Pantaleone, fol. XVI^o.

²² William Vaughan, *Directions for Health both Naturall and Artificial* (London: Printed by T.S. for Roger Jackson, 1617), p. 71.

²³ Pantaleone, fol. XVII.

²⁴ Platina, *Le grand cuisinier*, p. 38^{vo}; Hugo Fridaevallis, *De tuenda sanitate* (Antwerp: Christopher Plantin, 1586), p. 146.

²⁵ Baldassare Pisanelli, *Trattato della natura de cibi et del bere* (Venice: Gio. Alberti, 1586), p.128–9

²⁶ Joseph Duchesne, *Le pourtraict de la santé* (Paris: Claude Morel, 1606), p. 435–437. The author mentions that whey is used in Italy to purge adust or burnt humors and melancholy, and also that in mountainous regions it is consumed in place of water and made into soup.

²⁷ Pantaleone, fol. XVI^o. ‘Quis dubitat lac animalis iocundi laudibilius esse lacte animalis tristabilis...’

²⁸ Gulielmo Menapius, *De ratione victus salubris* (Basel: Bartholomew Westheimer, 1541), p. 524.

²⁹ Iacobus Sylvius, ‘Consilium perutile adversus famem et victum penuriam’ in Jean Liebault, *Thexaurus sanitatis paratu facilis* (Paris, 1577), p. 38 ‘Omnium delicatissime et citissime nutrit qui ex lacte verno.’

- ³⁰ Pantaleone, fol. XVIII. 'Varias animalium complexiones qui nobis maxime manifestat ex colore pillorum suorum.'
- ³¹ Pantaleone, fol. XVII.
- ³² Gazius, fol. hvi.
- ³³ Henry Buttes, *Dyets Dry Dinner* (London: Tho. Creede for William Wood, 1599), fol. N2^{vo}.
- ³⁴ Georgius Pictorius, *Dialoghi del modo del conservare la sanita* (Venice, Vincenzo Valgrisi, 1550), p. 37. 'Gli huomini grandi temperano la malitia del latte con il zucchero, overo col mele, perche in questo modo vogliono che facilmente s'impedisca la sua corruttione.'
- ³⁵ Menapius, p. 525.
- ³⁶ This is related by Sir Thomas Elyot, p. 34.
- ³⁷ Tobias Venner, *Via recta ad vitam longam* (London: Edward Griffen for Richard Moore, 1620), p. 88.
- ³⁸ Gazius, fol. hv^{vo}. 'Multoque magis predicta faciet nocumenta sicut grossis cibariis permixtum fuerit.'
- ³⁹ Elius Eobanus Hesus, *De tuenda bona valetudine*, with commentary by Ioannes Placotomus (Frankfurt: Heirs of Christian Egenolff, 1556), p. 66^{vo}. 'Dentibus et gingivis inimicum. Diligenter igitur post usum lactis abluendi.'
- ⁴⁰ Venner, p. 89.
- ⁴¹ Vaughan, p. 72.
- ⁴² Hollings, p. 35.
- ⁴³ Gulielmo Grataroli, *A direction for the health of magistrates and students*, translated by Thomas Newton (London: William How for Abraham Veale, 1574), fols. Iiv^{vo}–Ki^{vo}; Benedict of Nursia, *Opus ad sanitatis conservationem* (Bologna, Domenico de Lapis, 1477), fol. K4; Gazius, fol. hiii^{vo}, 'Lac...augmentum faciens in cerebro.'
- ⁴⁴ Ludovicus Nonnius (Alvares Nuñez), *Diaeteticon* (Antwerp, Petrus Bellerus, 1645), p. 206, 'et nostro aevo Septentrionalium plerique, lac in deliciis habent: quod Belgicae populi abunde testari possunt.'
- ⁴⁵ Charles Estienne (Carolus Stephanus), *De nutrimentis* (Paris: Robert Stephanus, 1550) p. 40, 'Scoti atque Hiberni obsui lactis usum ferocem, robustumque corporis habitum induere conspiciantur'; Sebizius, p. 751, 'Helvetiorum in alpibus degentium praecipua alimenta sunt lac, caseus et butyrum.'