

Chapter 20

Longevity Foods in Myth, Legend and History



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Abstract Human beings have always had a tremendous interest in longevity foods, the foods that may be most beneficial for healthy longevity. This interest is natural and may be deeply rooted in human thought and experience. The present historical-cultural analysis will survey some of the historical traditions, myths, legends, cognitive, social, cultural and ethical norms related to the varied concepts of longevity foods, across the world, from antiquity to the early modern period. This work will provide a multi-disciplinary framework for the discussion of longevity nutrition, by presenting the search for longevity foods as intertwined in a rich historical, socio-cultural, ideological and cognitive milieu conducive to the pursuit of healthy longevity.

Keywords Longevity foods · Ayurveda Rasayana · Traditional Chinese medicine · Internal and external alchemy · Magic · Religion · Ethics · Moderation · Dietary restriction · Rejuvenation

20.1 Longevity Foods and Culture

Human beings have always had a tremendous interest in longevity foods, the foods that may be most conducive to healthy longevity. This interest is natural and may be inherent in human thought and experience. Foods are the most obvious means to sustain life and influence life's powers. And if any and all foods can sustain life, then it could be straightforwardly inferred that some foods may be especially potent for sustaining life, for enhancing health and longevity. Thus, the interest in longevity foods has been perennial and universal across cultures. Yet, often this interest has been expressed as a demand for 'the right recipe,' asking what it is exactly that we need to eat to prolong the days of our life in good health. Often it has amounted to an even simpler demand for the right 'nutritious pill'—conveniently prepackaged, preferably at a discounted price—that one could swallow, without even the need to bother with recipes and preparations.

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However, a cultural study would reveal that the search for longevity foods is much more complex than simply listing the right nutritious ingredients. Rather, it involves the construction of elaborate social practices, normative behaviors and even rituals for the obtaining, preparing and consuming of the foods. It creates articulate belief systems, even entire historical and communal identities, philosophical worldviews, cosmologies, mythologies and religions, woven around the foods. It entails special patterns and modes of narration and cognition. In short, it involves the vast historical and cultural lore integral and often determinative for the conceptions of longevity foods. Often the cultural and ideological motifs were the primary sources for creating the longevity recipes.

The present historical-cultural analysis will survey some of these historical traditions, myths, legends, cognitive, social and cultural norms, related to the diverse concepts of longevity foods. The aim of this work is to advance the academic and public interest in longevity foods, in healthy and life-prolonging nutrition. Yet, it aims to raise this interest not by providing statistical correlations and normative recommendations for 'the right recipes,' but by presenting the search for longevity foods as intertwined in a rich historical, socio-cultural, ideological and cognitive milieu conducive to the pursuit of healthy longevity.

20.2 Longevity Foods and Magic: The Power of Imagination

The discovery and development of longevity foods is now firmly associated with scientific thought, with the standards of scientific methodology and evidence. Yet, historically, the establishment of certain foods as longevity foods was firmly rooted in magical thinking, sometimes coupled with and sometimes decoupled from sound empirical observations of the foods' benefits. Yet, the element of magical thinking has been fundamentally present and needs to be recognized.

A classical explanation of magical thinking can be found in Sir James George Frazer's seminal anthropological work *The Golden Bough: A Study in Magic and Religion*, first published in 1890 (Frazer 1925, pp. 11–12):

If we analyse the principles of thought on which magic is based, they will probably be found to resolve themselves into two: first, that like produces like, or that an effect resembles its cause; and, second, that things which have once been in contact with each other continue to act on each other at a distance after the physical contact has been severed. The former principle may be called the Law of Similarity, the latter the Law of Contact or Contagion. From the first of these principles, namely the Law of Similarity, the magician infers that he can produce any effect he desires merely by imitating it: from the second he infers that whatever he does to a material object will affect equally the person with whom the object was once in contact, whether it formed part of his body or not. Charms based on the Law of Similarity may be called Homoeopathic or Imitative Magic. Charms based on the Law of Contact or Contagion may be called Contagious Magic. ... Homeopathic magic is founded on the association of ideas by similarity; contagious magic is founded on the association of ideas by contiguity. ... Both branches of magic, the homoeopathic and the contagious, may

conveniently be comprehended under the general name of Sympathetic Magic, since both assume that things act on each other at a distance through a secret sympathy.

The Golden Bough gives a striking example of employing sympathetic/homeopathic magic—based on the principle “like produces like”—for increasing longevity. As Frazer reports (p. 36):

To ensure a long life the Chinese have recourse to certain complicated charms, which concentrate in themselves the magical essence emanating, on homoeopathic principles, from times and seasons, from persons and from things. . . . Amongst the clothes there is one robe in particular on which special pains have been lavished to imbue it with this priceless quality. It is a long silken gown of the deepest blue colour, with the word “longevity” embroidered all over it in thread of gold. As the garment purports to prolong the life of its owner, he often wears it, especially on festive occasions, in order to allow the influence of longevity, created by the many golden letters with which it is bespangled, to work their full effect upon his person.

Not just garments, but also other objects, including foods, could carry such a symbolic-magical function, wishfully thought to work their imaginary effects to extend a person’s longevity. In this mode of thought, food is not just a mere foodstuff, but an empowering sign and symbol. The actual empirical influence, if it is indeed observed, is secondary to the original symbolic, magical and ritualistic function of the food.

The magical “association of ideas”—either based on “similarity” or “contiguity”—may be considered a ramification of basic human imagination, the metaphorical and metonymical thought processes that seek analogies and connections in the world of experience. The commonality of physical forms and spatial relations may be deeply engraved in the human mind (Johnson 1987). Thus it should not be surprising that human imagination made various symbolic associations between human life prolongation and various observable properties among the common foods. Various purported healing and life-prolonging powers of foods have been derived from their observable properties, such as “thorniness and odor,” “size,” “age,” “movement,” “quaking and rustling of leaves,” presence of “seeds” and “exudations,” “shape,” “color,” “place and method of growth,” etc. (Simoons 1998). Foods with attractive attributes may have been believed to attract beneficial influences, while unattractive foods may have been hoped to repel threats (or vice versa). Associative imagination has been the basis of the ancient medical doctrine of “signatures” according to which the intrinsic powers of entities, either healing or impairing, are signified by their ostensible similarities to the object of their influence (Vannier 1945). By seeking “symbolic analogies” (“sympathies” or “affinities”) for poisons and remedies, the proponents of this doctrine hoped to discover the means that would provide nourishment, while absorbing or expelling the poisons or excess matters, and thus purifying the body and inducing it into a state of stable equilibrium. Beside the theorizing, analogizing and imagining, actual effects from partaking of certain foods, either beneficial or harmful, could also have been observed, and formed the basis for dietary recommendations. And, of course, for many foods, the imagination may have contributed to the observed effects, due to what is now commonly referred to as “psychosomatic” or “placebo” influences. But for many foods, such empirical

considerations appear to be only additional, and often secondary or even negligible, compared to the magical associations.

Based on such magical associative thought principles, or the sympathetic “association of ideas,” not necessarily empirically valid, but rather intuitive and ostensible, there have been promulgated a vast assortment of foods presumably extending healthy longevity.

The magical justifications for selecting longevity foods are salient in Traditional Chinese Medicine, in particular in its branches stemming from the Taoist tradition of external alchemy or external elixir production (Waidan) and internal alchemy or body-internal elixir production (Neidan) (Kohn 2001). In traditional Chinese culture, longevity, even extreme longevity, has always been a defining, all pervasive pursuit, especially in Taoism (allegedly emerging c. 600 BCE with the teaching of Lao Tse), but apparently also earlier. In the traditional Chinese household pantheon, “Longevity” (Shou, 寿) is one of the three most venerated deities, alongside “Happiness” (Fu, 福) and “Prosperity” (Lu, 禄), altogether referred to as the “three lucky star gods—Fu, Lu, Shou.” According to Chinese legend, the Yellow Emperor, Huangdi (Huang-ti), fabled to have originated many fields of Chinese culture around 2600–2700 BCE, also possessed the secret of immortality. He is not to be confused with China’s first historical emperor and seeker of immortality recipes, Qin Shi Huangdi, 259–210 BCE. Taoism built on the ancient legend and magic, yet developed an elaborate prolongevity system, with many practitioners and many books discussing the achievement of extreme longevity on Taoist principles (Gruman 1966; Kohn 2001). In this tradition, the main means for attaining extreme longevity was through consuming special foods, often with salient imaginative magical characteristics.

Gerald Gruman, in his classical work *A History of Ideas About the Prolongation of Life: The Evolution of Prolongevity Hypotheses to 1800* (1966) lists some of the attributes and properties of foods commonly believed to extend longevity (the “prolongevity foods”) in Taoist practice (Gruman 1966, p. 44):

These prolongevity foods or “hsien [immortal] medicines” were chosen for a variety of reasons. Many of the organic products were singled out in accord with the phoenix theme, that there are plants and animals enjoying a much greater life span than that of man: included here would be items like tortoise broth, crane eggs, and pine resin. Eggs of all sorts were valued in line with the Taoist regard for the perfect vitality of the embryo. Peaches were associated with the fruit in the Western Paradise of Hsi Wang-mu. Great numbers of herbs and minerals were venerated for such properties as a red color (like cinnabar), a resemblance to man or an animal (e.g., various roots), a slippery fluidlike texture or a translucent, glowing appearance. At the top of the list were such valuable minerals as pearls, mica, jade, silver, gold, and cinnabar.

Most of these properties (e.g. redness, fluidity, glow) were imaginatively associated with vitality, with a greater content of the vital energy “chi,” hence foods possessing such properties were singled out as longevity foods. The ancient text entitled “Ts’an T’ung Ch’i” (“The akinness of the three,” c. 142 CE) attributed to the famous Taoist alchemist and inventor Wei Boyang (Wei Po-Yang), notes the principles for selecting such foods implicitly: “One should make inferences from clues and signs just as he would from the appearance of strangers he meets. The thing to do is

to compare things by classes and to trace their beginnings and ends” (Wei Po-Yang 1932, p. 253).

The imaginative inferences are exemplified in the ancient Taoist text *Baopuzi* (Pao-p’u-tzu) or “The Book of the Master Who Embraces Simplicity” attributed to the alchemist Ge Hong (Ko Hung, 283–343 CE). In the chapter “The Genie’s Pharmacopoeia,” the book provides an extensive list of longevity foods and medicines, along with ways of their procurement, including cinnabar, gold, silver, excrescences, jades, mica, pearls, realgar, brown hematite, quartz, rock crystal, geodes, sulfur, wild honey, laminar malachite, pine and cypress resins, truffles, yellow dock, liriopse, tree sesame, salomonina, goldthread, fern, mulberries, lycium (box-thorns), etc. etc. (Ware 1966, p. 178). Most of these substances are characterized by the natural properties of durability that could presumably be transferred to the persons who consume them. Of special interest is the valorization of mushrooms (“Zhi,” sometimes translated as “excrescences”) as longevity foods. *Baopuzi* lists several types of the longevity mushrooms or “excrescences”: “rock, wood, herb, flesh, and the tiny, each of them has almost a hundred species” (Ware 1966, p. 179). Their potency is said to range from extending human longevity by hundreds of years to granting potential immortality. The metaphoric association of substances of such diverse types, commonly designated as “longevity mushrooms,” seems not obvious. Yet presumably their common signs of durability, etymological or visual similarities, or perhaps some psychoactive properties, apparent to the imaginative magicians, justified their classification as a single general category of longevity foods. The magical mental association as a basis for the longevity food conception was particularly prominent in the Chinese tradition. But similar instances of association of ideas can be found throughout the world—in India, Europe, the Americas and elsewhere (Andrews 2000; Simoons 1998; Schultes et al. 2001).

The element of magical thinking has been persistent and pervasive in the history of “longevity foods.” This element needs to be recognized, and should not be underestimated. We may rather ask ourselves, whether in our presumably more enlightened and evidence-based age, the same magical patterns of thought are still not strongly present. Apparently, large segments of the public still exercise the same type of magical justifications in their nutritional choices as our distant ancestors. Though there may be also more modern developments of magical thinking. Thus, marketers often advertise ‘anti-aging brands’ showcasing robust, successful and happy elderly consumers of the brands, yet without much actual evidence of the products efficacy. And yet some parts of the public believe that by partaking of these brands, they too will become as robust, successful and happy as people in the advertisements. Is it not yet another case of belief in “contact magic” based on the magical “Law of Contagion”? And when some parts of the popular-scientific community believe that life-prolonging effects of certain nutrients as observed in cells or simple model organisms, have immediate relevance and instructive value for humans—is it not a case of belief in “imitative magic” based on the magical “Law of Similarity”? And when some longevity advocates are convinced that by speaking so much more about longevity research, actual longevity therapies will necessarily arise much faster and

the actual human longevity will become much greater—is it not yet another potential case of “sympathetic” magical thinking, when deeds are believed to be directly engendered by words? Even such commonplace phrases as “you are what you eat” may be yet another example of “sympathetic” magical perception, when certain ostensible attributes are projected on the entire object. Such imaginative magical thinking may be an inherent part of our human nature, but its presence needs to be recognized and distinguished from empirical scientific evidence, in order to better navigate our rational search for truly effective longevity foods.

20.3 Longevity Foods and Religion: The Power of Regulation

Magical thinking is not the only cognitive construct that has been strongly associated with the conceptions of longevity foods. Frazer distinguished magical thinking from religious thinking, and both from scientific thinking. Magical thinking sought connections and influences between phenomena in the natural world, even though those were erroneously deduced by mere imagination. Science also sought connections and influences in the natural world, though based on observation, evidence and logic. On the other hand, religious ideology has aimed to produce beneficial effects in our world by propitiating the supernatural realm, by following certain ideations and practices to attract the favors of deities and the assistance of divine powers, while avoiding their punishments and repelling their curses. Though, of course, combinations of different modes of thought have often been present, between magic and religion, but also between magic and science, as well as between science and religion. The connection to religious devotional practices and philosophical ideations is strongly felt in the religious traditions connected to longevity foods. The life-prolonging morality and self-control, but also altered states of mind, often feature as parts of such religious ideations and practices.

There have been many examples of narratives on great longevity, even radical life extension and immortality, and the dietary practices necessary for their attainment, in the religious traditions of Sumer, Egypt, Persia, China, Japan, Korea, ancient Greece and the Roman Empire, in Judaism, Christianity, Islam, Hinduism, as well as more modern religious movements (Stambler 2014). Rejuvenation, resurrection and extreme longevity thanks to special foods are also recurrent themes in the native myths of North, Central and South America, and in Oceania and Africa. There are stories, in the vast majority of these native mythological traditions, that humans were originally immortal, and succumbed to death only because of loss of self-control, negligence, ill-will or accident (Grimal 1989). Loss of self-control was an especially fatal human fault responsible for the loss of longevity foods and the resulting loss of the powers of longevity. Several characteristic examples will be provided further on.

Notably, in these traditions, prolongevity substances, especially plants, are almost invariably perceived as foods. Insofar as foods were generally vital for the survival,

logically, also life-prolonging properties were presumed to be present in special kinds of foods. It may just have been difficult to imagine other means of consumption of putative longevity remedies. Hence longevity foods are often indistinguishable from longevity drugs.

Of further note is the fact that many substances associated with longevity were “entheogenic”—a term commonly denoting psychoactive substances used in religious practices, originating from the Greek words “entheos” (inspired by god) and “genesthai” (coming into being). Consuming such substances, in the religious practitioners’ mind, enabled their connection to the gods or the godly realm, drew to them the beneficial divine powers or repelled harmful demonic influences. The connection with the high supernatural realm was often perceived as altered states of mind, including hallucinations. Or rather, the altered states of mind, such as hallucinations, were taken as signs of a connection with the higher otherworldly spiritual realm. The connection to the spiritual realm would hopefully enable the adept to derive from it special powers, including longevity. Yet, in religious practices, self-control and the dominion of the mind over the body were even more ubiquitous attributes associated with the consumption of longevity foods, as will be exemplified shortly. Often the powers of self-control or mind-over-body control were linked with altered states of mind, as indeed strong self-control can be considered a rather unusual or “altered” state of mind.

A clear and rather simple connection between longevity foods, altered states of mind and religion, can be seen in the ancient native American traditions, from North America through South America. In these traditions, some of the longevity-granting, rejuvenating and healing plants included cocoa, cactus, aloe (octli), ayahuasca (caapi jungle vine), and manioc (Grimal 1989; Andrews 2000; Schultes et al. 2001). Many of these supposedly life-prolonging plants were also psychoactive (Andrews 2000; Schultes et al. 2001). That may provide an additional insight into the connection of physical and mental spheres in the pursuit of longevity. Some of the explanations for the connection may be that psychoactive plants appeared to provide a conduit with the spiritual world and with the gods, and thus to help the practitioners draw in divine powers of vitality from the other world and partake in the vitalities of the gods they contacted. Though there could be a more mundane explanation, such as that certain physical sensations (weightlessness, sense of inclusiveness, etc.) induced in the psychoactive substance users, became associated in their mind with vitality and longevity. In any case, the connection of the pursuit of longevity with the mental state is again apparent.

Yet, the mental-physical connection may be even more encompassing, comprising issues of morality, self-control and social regulation. Thus, an American Indian legend tells that people would have been immortal had they followed a wise man’s instructions, and welcomed an old man carrying a basket of rotting flesh, rather than a pleasant looking young man carrying sweets (Grimal 1989, p. 489). Thus, foolish indulgence and lack of foresight and discipline, in particular in relation to food, became the original sins that brought about human mortality. The instructions on the ethical behavior in relation to food, longevity and mortality, have been elaborated in virtually every religious tradition.

Thus, one of the earliest representations of rejuvenation and life extension in relation to foods, as well as one of the earliest known works of literature and religious instruction, is the Sumero-Babylonian *Epic of Gilgamesh*, a story about the hero's struggle with death (the most complete version has been dated from c. 1300 BCE to 650 BCE, but the story possibly originated as early as about 3000 BCE). According to the *Epic of Gilgamesh*: "There is a plant like a thorn with its root [deep down in the ocean], Like unto those of the briar (in sooth) its prickles will scratch [thee], (Yet) if thy hand reach this plant, [thou'll surely find life (everlasting)]" (Campbell 1928, pp. 55–56, Tablet 11 "The Flood"). The plant has been likened to box-thorn and dog-rose (Veenker 1981). Gilgamesh initially procures the plant, but then loses it and with it loses the hope of immortality. Yet, the loss of this particular plant, and of the immortality it may have conferred, is only an outcome of a more profound human failing. The primary cause for the loss of immortality was the lack of self-control. When first tested for his worthiness by the immortal sage Utnapishtim, Gilgamesh loses the chance of immortality by not being able to exercise enough self-control to fight his urge to sleep. And then, after procuring the plant of immortality from the bottom of the ocean, Gilgamesh is not watchful enough and loses it to a serpent. Thus, the intrinsic human inability of self-restraint prevents further human development toward a more powerful, robust and long-lived being. The plant (foodstuff), regardless of any empirical qualities, serves to convey the allegory.

There are striking parallels between the description of the immortalizing plant, the flood and the story of the extremely long-lived Utnapishtim in the epic of *Gilgamesh* and the biblical stories (with the composition sometimes dated c. 1300 BCE to 450 BCE) about the "tree of life" and about the extreme longevity of antediluvian patriarchs (Genesis 2:9, 3:22–24, 5:1–32). Notably, the access to the tree of life was lost due to the lack of discipline of Adam and Eve. Also the great longevity of antediluvian patriarchs was annulled due to human depravity that brought about the deluge.

In the ancient cultural traditions, there were many "recipe" type referrals to longevity foods that did not seem to bear a direct relation to questions of morality, self-control, mental state or religious precepts. But some indirect relations could nonetheless be inferred, even in those less obvious cases. Thus, in one of the earliest known Egyptian medical papyri, "The Edwin Smith Surgical Papyrus" (commonly dated to the period of the New Kingdom of Egypt, c. 1500 BCE), there is a "Recipe for Transforming an Old Man into a Youth." The recipe involved the use of bruised and dried "hemayet-fruit." Some recent identifications of this remedy vary from fenugreek to almond (Ghalioungui 1973; Jacobs and Hart 2019). The remedy would not only have a cosmetic anti-aging effect—remove wrinkles, beautify the skin, remove blemishes, disfigurements, and "all signs of age"—but it would also have a true rejuvenating effect, as it would remove "all weaknesses which are in the flesh" (Breasted 1930, pp. 506–507). Alongside the purely material recipes, the book abounds in religious incantations designed to ward off evil influences. In yet another ancient Egyptian medical papyrus, "The Ebers Papyrus" (c. 1500–1600 BCE), there are described cosmetic anti-aging treatments to prevent the graying of hair (for example by the use of honey, onion water, donkey liver and crocodile fat), and to stimulate

hair growth (for example by the use of flaxseed oil, gazelle excrements and snake fat). Yet, actual treatment of aging as a medical condition was also mentioned: when a physician examines a person whose “heart is feeble as if the frailty of old age has overcome him ... then say thou: ‘It is an accumulation of morbid juices.’ He shall not wilfully minimize the danger, nor put his trust in feeble remedies” (Bryan 1930, p. 142). Large portions of the “Ebers Papyrus” are dedicated to combating diseases due to unhealthy and immoderate eating, such as constipation, that could be indirectly related to moral instruction (Bryan 1930; Joachim 1890). In this medical text, invocations of healing gods—Isis, Osiris and Ra—are also a part of preparing medicines. Another famous instance of the interest in healing and rejuvenation in ancient Egypt was the lore of Imhotep, the legendary high priest and chief minister to the pharaoh Djoser, and the reputed builder of the first step pyramid (c. 2650–2600 BCE). Among other accomplishments, Imhotep was said to be skilled in the art of rejuvenation and later deified as a god of medicine (Hurry 1926). Thus, the connection of medical practice with religious instruction can be perceived.

Notably, in ancient Egypt, medicine was largely under the control of the powerful priesthood who appropriated the responsibility for the physical preservation of the king and his subjects, as well as for the magical and religious rituals aimed to ensure the appropriate order of personal, public and environmental affairs. Thus, the religious priestly component of ancient Egyptian medicine was prominent, even though the functions of a physician, a magician and a priest were not always uniformly co-exercised by the same practitioners (Ghalioungui 1973). The preservation from ravishes of old age in this life and the preservation of the physical body as a necessary condition for the preservation of the soul in the afterlife, may have been parts of the more general concern with preservation and perpetuation in that culture. In ancient Egypt, the religion, including its dietary regimens, may have served as a means to discipline the citizens, to control and regulate the social order. The desire for social order and preservation may have coalesced with the goals of health and life prolongation. Arguably, the preeminent preoccupation of the Egyptians with immortality was inseparably linked to their static cosmology, to their obsession with preservation, balance and constancy in all spheres including the society. Moreover, a case may yet be made that many of their pioneering technologies, from pyramid construction to embalming and surgery to prolongevity food recipes and regimens, may have been at least partly driven by their general desire for individual and social preservation. Thus, in the Egyptian tradition too, longevity foods could be seen as a part and parcel of much broader social and ideological frameworks.

20.4 Longevity Foods and Myth: The Power of Self-control

Also in Hinduism (or rather in the variety of religions of India designated by this term), the pursuit of great longevity and the foods that may help achieve this goal, have been persistent themes since a very early time, and have been related to deep social, ideological and moral foundations. In India, the immortal Rishis, Arhats, and the

Ciranjivas (the “extremely long-lived persons”) have been revered. Their extreme longevity is often attributed to “Amrit”—अमृत—or the “nectar of immortality,” a revered and desired substance. In the legend (“purana”) of “Churning the Ocean of Milk,” the different supernatural races—Asuras (“demons”) and Devas (“gods”)—work together to create this “nectar of immortality” (Lidke and Dirnberger 2009). In the Rigveda, one of the earliest known Vedic collections of India (c. 1700–1100 BCE), the entire Book 9 is composed of hymns praising the immortality-giving “Soma” plant (Griffith 1891). Recent identifications of “Soma” range from fly-agaric, ephedra and cannabis, to sacred lotus, heather and honey (Flattery and Schwartz 1989). In the ancient Indian epic of the Ramayana (often dated c. 400 BCE, and sometimes purported to relate to events occurring 4000 and even 5000 BCE), the monkey king Hanuman uses the Sanjeevani plant (translated as “One that infuses life”) to revive Rama’s younger brother Lakshman who was severely wounded by Ravan (Griffith 1895). The life-giving Sanjeevani plant (sometimes spelled “sanjivani”) has been commonly identified as the lycophyte *Selaginella bryopteris*, growing at the Dunagiri (also called Dronagiri or Mahodaya) mountain in the Himalayas (Ganeshaiyah et al. 2009). As narrated in the “Shiva Purana” legend (c. 800–1000 CE), at the war between asuras and devas, during the rule of the asura emperor Jalandhara, the asuras were resuscitated using “mritasanjivani vidya”—the sacred knowledge of revival, which might involve the use of the Sanjeevani plant, and other components unattainable to us, such as “drops of water infused with mantras.” In the opposing camp, the devas too were revived by medicinal herbs brought from the Dronagiri mountain (Shastri 1970, pp. 870–871). Note that the mythological traditional narratives about the Amrit and Sanjeevani and the ritualistic formulas of the Soma may have served social functions: to maintain the social order, to bind the society together through narrative and ritual, to create and preserve the common historical identity. Thus, once again, the longevity foods and medicines function as elements of a vast cultural lore.

The traditional Indian medicine of Ayurveda, or “the science of (long) life,” also has a strong sanction from religion. According to the Ayurveda tradition, the principles of Ayurveda were created by Brahma, and underwent a chain of transmission among deities, from Brahma to Prajapati to the Ashvins, to Indra, who then taught this art to Dhanvantari, an incarnation of Lord Vishnu, the protector of life and the giver of Ayurveda on Earth (Bhishagratna 1907, p. 8). Ayurveda includes a special field of Rasayana (meaning, in Sanskrit, the path “āyana” of essence or juice “rasa”), which is mainly dedicated to rejuvenation, and mainly utilizes edible remedies or foodstuffs (e.g. juices, soups, mixed decoctions, pastes and cakes). According to one of the earliest Ayurvedic texts, *The Sushruta Samhita* (Sushruta’s Compilation of Knowledge, c. 800–300 BCE, attributed to Sushruta, an alleged disciple of Dhanvantari), life can be normally prolonged to 100 years. Yet, with the use of certain Rasayana remedies, prepared from certain plants, such as Vidanga-Kalpa and Brahmi Rasayana, life can be prolonged to 500 or 800 years (Bhishagratna 1911, pp. 518, 525). And the use of the “Soma plant, the lord of all medicinal herbs [24 candidate plants are named, such as Chandramah, Amsuman and Munjavan species], is

followed by rejuvenation of the system of its user and enables him to witness ten thousand summers on earth in the full enjoyment of a new (youthful) body” (Bhishagratna 1911, p. 536).

Of special interest in the text are the instructions for the preparation and application of the Soma elixir and other Rasayana treatments, integrating the physical, intellectual and moral domains. Mental and spiritual aptitude is considered vital for the successful treatment. As it is said of the Soma: “The Soma plants are invisible to the impious or to the ungrateful as well to the unbeliever in the curative virtues of medicine and to those spiteful to the Brahmanas” (Bhishagratna 1911, p. 538). A person preparing for the treatment must perform a cleansing, and undergo the treatment with mental clarity and spiritual awareness, including the recital of incantations (mantras), exercising “a quiet control over the mind” and renouncing “all passions and anger” (p. 535). Without those components a remedy would not be effective, “as the application of a dye to a piece of dirty cloth will prove non-effective” (p. 515). The application of Rasayana foodstuffs must be adjusted with the rest of the diet, such as “meals without any salts” (p. 520), as well as with the environment, the season and the general regimen of life. One cannot just consume Rasayana remedies mindlessly and expect favorable results, insofar as the treatment is “a combination of medicine and mantra” (p. 527). The physical effects of rejuvenation are necessarily accompanied by moral and intellectual effects. For example, the use of Svetavalguja Rasayana “would make the life of its user sinless, and extend it in the full glow of health and vigour and in the sound enjoyment of a vigorous memory and of all his intellectual faculties to a hundred green summers” (p. 522). The remedies are to be applied “in a spirit of self-control, whereby he would be able to acquire longevity” (p. 527). Thus, moral virtues, especially the virtue of self-control are perceived in the Ayurveda tradition as integral for the effective longevity nourishment.

The religious devotion and the pursuit of rejuvenation and radical life extension are also present in another foundational text of Ayurveda, *The Charaka Samhita* (Charaka’s Compilation of Knowledge, c. 300–100 BCE). Like Sushruta, Charaka attributes the origins of Ayurveda to the gods. According to the *Charaka Samhita*, the normal human life-span is 100 years. Yet, the users of an Amalaka Rasayana could live many hundreds of years and the users of the Amalakyasa Brahma Rasayana could reach the life-span of 1000 years (Van Loon 2003, p. 446, 455). The great sages, who grasped perfectly the knowledge of Ayurveda, “attained the highest well-being and nonperishable life-span” (Van Loon 2003, p. 107). This Ayurvedic text too emphasizes the vital importance of the synergy of the body and mind, spirituality and morality, social order and environmental soundness, for the successful longevity nourishment, beside the simple listing of nutritional ingredients. As the principle of synergy is succinctly described in the *Charaka Samhita*: “Thus the person subdued with malaise, depression, sleep, drowsiness, lassitude, lack of enthusiasm, dyspnea, incapability in physical and mental activities, loss of memory, intellect and lustre, becomes resort of illness and thus does not enjoy the normal life-span. Hence, looking to these defects, one should abstain from all the said unwholesome diet and activities so that he becomes fit for using the rasayana treatment” (p. 449). And furthermore,

“The formulations meant for providing longevity and alleviating senility and diseases succeed (only) in patients having purified mind and body and controlled self” (p. 467).

Of course, there may have been a considerable empirical basis for at least some of the longevity claims of at least some of the Rasayana remedies. Without at least some minimal shown efficacy, these remedies may have had difficulty surviving in medical study and practice for hundreds of years, to the present time. This empirical basis now continues to be evaluated, as many traditional Ayurvedic medicines are currently practiced and undergo testing and validation processes (Chaudhary et al. 2010). Yet, it is important to realize that empirical evidence for the efficacy of particular food ingredients, and of particular methods of their preparation, is not the only component in the construction of the longevity food traditions, often even not the main one. Religious and moral motivations for human development and for the maintenance of social order, the traditional narratives for the construction of personal as well as ethnic or national identities, the characteristic mental and psychological perceptions, are also indispensable components for any longevity food recipe.

Buddhism, having originated in India around the sixth century BCE, too had a strong connection to the pursuit of longevity (Maher 2009), with many common elements with other traditional Indian sources. Material means, in particular food-stuffs, for rejuvenation and life extension, have been developed and recommended by Buddhist physicians. But in this tradition too, the simple concoction of the remedy is only a part of the longevity food conception, other parts are from the social and mental domains: the ideological motivations, narrative traditions, communal rituals to maintain social coherence, and the self discipline to create and fulfill personal development.

In Buddhist tradition, the Great Buddha who grants Longevity is Amitābha, the Buddha of Infinite Light, also known as Amitāyus, the Buddha of Infinite Life. Those who invoke him will reach longevity in this realm, and will be reborn in Amitabha’s Pure Land or the Land of Bliss (Sukhāvātī or Dewachen in Tibetan Buddhism) where they will enjoy virtually unlimited longevity. This pure and egalitarian land of longevity was created by Amitabha’s avowed devotion and perseverance, through the adherence to the Buddhist merits, such as faith, energy, mindfulness, concentration, and wisdom.

In the Pure Land, divine plants grow that have life-sustaining and healing properties. There are mentioned palm trees, lotus trees and “the tree of awakening.” However, these are not simple foods: they provide sustenance and healing, but not necessarily through ingestion (Gomez 1996). The mental nourishment, or food as mental nourishment, is also integral for the overall environment of the Land of Bliss that permits deathlessness. This is clearly seen as an ideal, a vision toward which a devotee should strive. The food in the Land of Bliss corresponds to the spiritual and beautifying nature of that world. Thus, in the treatise Sukhāvātī-vyūha Sūtra (“The Sutra Displaying the World of Bliss”), it is said that “living beings in the Land of Bliss do not consume coarse food, or food consumed in lumps or morsels; rather whatever fare they wish to eat, that exact same dish they visualize in their minds as

already consumed. And thus their body is satisfied, their limbs are satisfied. Furthermore, they do not need to ingest any of this nourishment in order to feel satisfied” (Gomez 1996, p. 88).

Thus the Buddhist virtue of detachment may be implied, or satisfaction without addiction. The life-prolonging nutrition is not just moderate (subject to a conscious act of control of some degree), but the degree of conscious control is complete. No longer does the food dictate the nourishment to the person, but the person dictates the nourishment by one’s own wish. With such a high degree of mental control, the lifespan also becomes unlimited, as the person frees oneself from deadly material limitations. This interpretation also seems to be supported, in the Sutra, by the parable of a prisoner who, even though offered “much food and drink of various kinds, pure and excellent,” would not be able to “relish this food, consume it, or feel any satisfaction from it” (p. 105). The real benefit and enjoyment from food would accrue only if the prisoner is released from “the prison,” by implication set free from the dependence on and addiction to the limiting and damaging environment. Thus a moral element is strongly implied.

Related to the Indian tradition, in the ancient Iranian (Aryan) religious tradition, there are remarkable references to great longevity and longevity foods. There are strong commonalities between these traditions, apparently due to the common Indo-European origins. This commonality is exemplified in the similar terms and names of the gods. Though, curiously, some terms assume rather opposite meanings. Thus, in the Indian tradition, the “*devas*” are perceived as benevolent gods, and the “*asuras*” are the demons. In contrast, in the Iranian tradition, “*ahura*” are the gods (cf. the benevolent gods *Aesir* in Norse religions), while the “*daeva*” are evil spirits (Parpola 2015). However, many terms are very similar. Thus, what is called in the Indian tradition the life-prolonging “*Soma*” is referred to as “*Haoma*” in ancient Iranian (Aryan) religious sources, such as *Avesta*, the sacred text of the Iranian Zoroastrian religion (c. 1200–200 BCE) (Darmesteter 1883; Flattery and Schwartz 1989). The Iranian religious tradition also has a strong instructive moral sentiment regarding longevity. According to the *Avesta*, during the rule of the mythical king Jamshid (Yima), people knew no disease, aging and death (Darmesteter 1880). The legendary “cup of Jamshid” that this king possessed was said to be a container for the elixir of immortality and at the same time a means to reveal the world knowledge and gain wisdom and truth (Wilson 1999; Bennett 2018; Nematollahi 2018). The cup of Jamshid can be seen as a precious item in a great treasury of folklore telling of “magic vessels”—from the Cauldron of Rebirth in Celtic myths to the Holy Chalice (or the Holy Grail) in Christian legends (Forlong 1883; Matthews 1997). Those vessels were believed to impart special powers to the entities contained or prepared in them, especially the powers of revival and life extension, but also required moral worth to obtain and keep them. Possessing the magic cup was insufficient to keep prolonging Jamshid’s life indefinitely. According to “The Book of Kings” (*Shah Nameh*) by the Persian poet Ferdowsi (c. 940–1020 CE), Jamshid became proud and his reign of prosperity and longevity was terminated, and he himself was killed by the demonic king Zahhak (Zimmern 1883). This story once again emphasized that longevity could

not be just provided by the dishes that are eaten or vessels that contain the foods, but by the moral attitude of the people.

20.5 Longevity Foods and Ethics: The Power of Balance

Longevity foods have been incorporated as parts of the codes of moral conduct in almost every religion. Thus, in the Jewish religious rules of conduct (Halakhah)—“tumah” (the unholiness, evil or impurity), generally and in connection to foods, means simply “the negation of life,” hence the prohibition of murder and of bloodshed, and the laws of “tumah ve’taharah” or ritual purity, also in relation to foods (Berlin 1997). A variety of foods have been recommended for their presumed healing and life-prolonging properties, as a part of religious teaching in the Bible and the Talmud (Rosner 1995).

There are, in the Jewish religions tradition, references to longevity foods that are of a more mythical and mystical nature. For example, in the Jewish oral tradition, “Luz” (almond) is a very fraught mythical and mystical concept, associated with life prolongation, even immortality. It denotes the source of resurrection and regeneration, as well as an endocrine gland and a sprout. “Luz” is also the name of the blessed land of the immortals, sometimes said to be located in the northern area of Israel (Kohler 1906). The traditional narrative about “Luz” may even foreshadow some notions of regenerative biotechnology. Thus, Jacob used “Luz” (almond) rods for “bioengineering,” to change the color of his sheep (Genesis 30:37–39). Moreover, there is an extensive Jewish oral tradition about the “Etzem Luz”—עצם לוז—the bone of resurrection, the indestructible part of the human body from which the resurrection will proceed. The properties of the luz bone could have been tested in experiments, as for example related in the story of Rabbi Joshua and Emperor Hadrian in the Talmud (Kohler 1906). The description of the miraculous properties of Almond, as linked with longevity and regeneration in those stories, is mainly mythical and mystical.

Yet, in other instances of the Jewish religious tradition, there is a strong rationalist attitude toward longevity foods, associated with a clear moral imperative. The Jewish religious tradition is generally quite supportive of the efforts for life preservation and longevity (Stambler 2017). The principle “ve-chai bahem”—וְחַי בָּהֶם—viz. the obligation to live by the commandments and not to die by them (Leviticus 18:5) has been strongly emphasized. In line with this obligation, the great Jewish rationalist religious philosopher and physician Maimonides (1135–1204, Rabbi Moshheh ben Maimon) posited a rational moral imperative for the prolongation of life. In his “Responsum on Longevity” Maimonides stated: “It is written: ‘When you build a new house, you should make a parapet for your roof so that you bring not bloodshed upon your house should any man fall therefrom’ [Deut. 22:8]. This phrase proves that preparing oneself, and adopting precautionary measures—in that one is careful before undertaking dangerous enterprises—can prevent their occurrence. . . . This demonstrates, however, that there is no firmly determined time for death. Moreover, the elimination of harmful things is efficacious in prolonging life, whereas the

undertaking of dangerous things is the basis for shortening life” (Rosner 1998). This statement expresses the rational moral imperative for life prolongation. The actual means for life prolongation were envisioned by Maimonides as maintaining an ideal nutritional balance in the body, fully replenishing the vital substances expended in life processes with new necessary nutritional substances. Such a maintenance of the nutritional balance, according to Maimonides, could in principle prolong life indefinitely (without a definite endpoint of life). In Maimonides’ own words: “For us Jews, there is no predetermined end point of life. The living being exists as long as replenishment is provided [for that amount of] its substantive moisture [i.e. bodily humors] that dissolves” (Rosner 1998). Thus the concept of nutritional balance becomes linked with the principles of ethical conduct, derived from religious teachings. Balance and moderation are related in Jewish tradition. Thus a dictum attributed to Maimonides spells out “Health” (“BRIUT” in Hebrew) as an abbreviation of “Restrained anger, reduce eating, increase movement” (“bolem rogzo, yafhit okhlo, veyagbir tnuato”).

A similar link between religion, ethical instruction and prolongevity nutrition, can be also observed in the works of medieval Islamic and Christian scholars who contemplated the pursuit of longevity. Thus according to the seminal Islamic alchemist Abu Mūsā Jābir ibn Hayyān (also known as Jabir in Arabic and Geber in Latin, c. 721–815), the prolongation of healthy life may be achieved by a balancing or equilibration of “elements” (“natures”) in the human body. “This equilibrium once obtained,” he wrote “they will no longer be subject to change, alteration or modification and neither they nor their children ever will perish” (Gruman 1966). The preservation of balance of particular elements (natures or humors) has become the foundational principle for the scholastic theory of longevity also in the works of medieval Christian philosophers, alchemists and physicians, such as the Italian theologian and alchemist Thomas Aquinas (1225–1274) whose *Summa Theologica* (1265–1274) includes discussions of alchemy, health and longevity; the English philosopher and alchemist Roger Bacon (c. 1219–1292) who treated on longevity in his *Opus Majus* (1266); the German friar and alchemist Albertus Magnus (1193–1280) who wrote about the prolongation of life in *On Youth and Old Age and On Life and Death*; the Italian physician and alchemist Arnaldus de Villa Nova (c. 1240–1311) whose original and translated medical books such as *Opera Medica Omnia* include the subjects of old age and long life, and many others (Stambler 2019a). In these and many other religious thinkers, the virtues of balance, moderation and self-control generally, and the same virtues exercised in relation to nutrition in particular, were inseparable elements of the moral religious code of behavior.

The notions of balance, self-control and moderation, almost always went hand in hand in the religious ethical rules related to longevity foods and life-prolonging nutrition. Yet, the element of moderation, or self-limitation, appears to be by far the strongest valorized premise in these rules. According to many of those rules, in order to extend health and longevity, it does not matter so much what the person eats, but rather what the person does not eat, or limits oneself in eating. A vast array of taboo foods have been proposed in various religions, that were seen not just as spiritually harming, but also health-impairing and life-shortening. For example, in some cultures—in ancient Egypt, India, Greece and Rome—the eating of beans

was prohibited or discouraged, especially black beans, as they were associated with the world of the dead or believed to contain the souls of the dead, and thus could be harmful or polluting for the living. In ancient Egypt, the eating of beans was prohibited to the priests rather due to their sacredness as symbols of the inseparably related death and life through resurrection. Yet in other cultures, especially among native Americans, beans were permitted for consumption and even revered for their life-giving germinative power (Simoons 1998; Andrews 2000; Ghalioungui 1973). Paradoxically, often the same observed properties of certain foods were reasons for their designation either as taboo or medicine. Thus, the strong pungent taste and smell of garlic and onions, in oral traditions across the Old World, associated them with evil influences, as being desirable for the demons and offensive for the gods, discouraging their consumption. Yet in other instances, often in the same parts of the world, those very same properties of strong pungent smell and taste were believed to repel evil influences and strengthen the body of the consumer. Accordingly, in those traditions, garlic and onions were seen as beneficial or medicinal and recommended as foods or protective amulets. Thus, food recommendations based on magical “association of ideas” could be quite ambiguous. In China, in the Taoist longevity tradition, any person wishing to achieve great longevity was discouraged from eating “the five grains” (rice, millet, wheat, oats, and beans) as those cereals were associated with corruptible earth and believed to nourish “the three worms” or “the three corpses”—the destructive demonic entities residing in the human body and bringing about early death (Gruman 1966; Ware 1966). Yet, in other instances, in cultures across the world, including China, those same cereals were revered as essential staples of life, originating from benevolent gods (Andrews 2000). In the Americas, some “pseudo-cereals” like quinoa and amaranth were considered divine and life-prolonging.

Another interesting case of dietary restriction concerns eating plants of the nightshade family (*Solanaceae*, commonly containing the alkaloid solanine). These include plants with obvious intoxicating properties, such as mandrake, henbane, thorn apple, belladonna (deadly nightshade) and tobacco, but also common foods, such as eggplants, peppers, tomatoes and potatoes (Schultes et al. 2001; Andrews 2000). Some of the clearly toxic, stupefying and hallucinogenic plants were associated with witchcraft and demonic possession and avoided as foods. Yet also some of the common foods of this family, especially those brought late to the European diet, such as potatoes and tomatoes, were at least initially viewed with suspicion, perhaps as any newcomers might be and perhaps also due to the family association with the obviously poisonous plants. Curiously, some other intoxicating and psychoactive plant foods and drinks of other types, such as grape wine, grain beer and honey mead in Eurasia and ayahuasca brew in America, with their exhilarating, mind-altering properties, were often sanctioned as beneficial and even sacred substances, and often associated with health and longevity (Schultes et al. 2001; Andrews 2000). Once again, magical imagination combined with sensory experience may have led to ambiguous and sometimes contradictory dietary recommendations. Yet, as it can be seen in almost any case of specific taboo foods, whose consumption was prohibited or limited—the magical imaginary inferences, religious moral prescriptions and real-life cautionary experiences have been intertwined.

Beside the restrictions and limitations on specific foods, just moderation as such, or the limitation in consuming any foods, is probably the most persistent element in longevity nutrition guides throughout the centuries. Fasting, so common in virtually any religion, is one of the most prevalent ramifications of dietary moderation. In various religious traditions, fasting, apart from spiritual purification and connection with the gods, was also directly associated with physical effects, including longevity, even extreme longevity. Here again, the power of fast was not seen as due to some special “physiological mechanism” as we might seek today, but due to special powers of the devoted mind and communion with the gods that led to the life-prolonging effects. It may have been assumed that if the person were able to rule over the constraints of one’s passions, even the passion for food, those passions would no longer hold sway over the person, and this would enable the person to overcome the present constraints, including the constraints of a short lifespan.

This line of thought is clearly perceived in Indian mythology. For example, several asuras were allowed the gift of extreme vitality thanks to their powers of self-control, austerity and perseverance, including prolonged fasting. Among the asuras who achieved great vitality by means of austerity were Hiranyakashipu and Arunasura. The story of Arunasura, as related in the great purana *Srimad Devi Bhagavatam* (c. 800–1000 CE), is instructive considering the underlying mindset (Swami Vijñanananda 1922, pp. 1046–1053):

With a view to conquer the Devas, he [Arunasura] went to the banks of the Ganges in the Himālayās, practised a very hard Tapasyâ [penance], to Brahmâ, taking Him to be the Protector of the Daityas [an asura race]. First influenced by Tamo Guṇa [the evil quality of ignorance], he withheld in his body the five Vâyus [primary breaths] and partook only the dry leaves and repeated the Gâyatrî Mantra [the universal protective prayer] and practised austerities. Thus he practised for full ten thousand years. Then for another ten thousand years the Daitya lived drinking some drops of water only; then for another ten thousand years he remained by inhaling air only; and then for another ten thousand years he did not take any thing and thus practised he his wonderful Tapasyâ.

Though Arunasura’s initial wish that he “shall not die” is refused by Brahma as “an impossibility”—his austerities are nevertheless rewarded by Brahma by the boon of incredible invulnerability to many causes of death. Arunasura’s death “shall not be caused by any war, nor by any arms or weapons, nor by any man or any woman, by any biped or quadruped or any combination of two.” Thus, through the power of self-control, particularly fasting, Arunasura advances greatly in his quest to conquer death. But alas, deathlessness is “an impossibility.” Hence he is eventually killed by the contrivance of the devas via the pestilence of insects. The allegory is deep, suggesting the ultimate vulnerability and fallibility of sentient living beings, but also implying that the struggle for great vitality and longevity is not futile and the gift of vitality may be awarded for perseverance, self-control and self-denial. This is the power of ‘extreme moderation’ believed to be necessary for extreme longevity, as paradoxical as the notion may seem.

20.6 Longevity Foods and History: The Power of Moderation

In various forms and expressions, the need for moderation, particularly moderation in diet, has remained the absolute consensus among the seekers of extended longevity for centuries (Shapin and Martyn 2000). Almost as invariably, the recommendation of moderation was woven into a fabric of moral instruction for the most beneficial behavior, for the individual as well as for the society.

One of the earliest emphatic instances of this stance can be found in the words of Lao-Tse, the great legendary teacher of Taoism (c. sixth century BCE), in his treatise *Tao Te Ching* (Lao-Tse 1891, Chap. 59 “Guarding the Tao,” pp. 102–103):

For regulating the human in our constitution and rendering the proper service to the heavenly, there is nothing like moderation. It is only by this moderation that there is effected an early return (to man’s normal state). That early return is what I call the repeated accumulation of the attributes (of the Tao). With that repeated accumulation of those attributes, there comes the subjugation (of every obstacle to such return). Of this subjugation we know not what shall be the limit; and when one knows not what the limit shall be, he may be the ruler of a state. He who possesses the mother of the state may continue long. His case is like that (of the plant) of which we say that its roots are deep and its flower stalks firm:—this is the way to secure that its enduring life shall long be seen.

The consensus about the importance of moderation has existed in the East and in the West. Thus, one of the founding figures of Western medicine, Hippocrates (c. 460–370 BCE) gave prescriptions for healthy longevity, such as “exertion, food, drink, sleep, sexual activity, in moderation” (Smith 1994, p. 263). Aristotle (384–322 BCE) advised on the need for moderation to preserve health in old age, for example in his treatises *On Length and Shortness of Life* and *On Youth, Old Age, Life and Death, and Respiration* (Barnes 1984). Also Cicero (106–43 BCE), in *On Old Age* (*De Senectute*), advised that “we must look after our health, use moderate exercise, take just enough food and drink to recruit, but not to overload, our strength” (Cicero 1900, p. 59). Generally, moderation in food had been a central tenet of the art of “gerocomia” (“gerocomica” or “gerontocomia” from the Greek “care for the aged”) since the writing of the Greco-Roman physician Galen (Aelius/Claudius Galenus, c. 129–217 CE). These principles were stated in Galen’s book *De tuenda Sanitate. Gerontocomia* (5th book *On the Preservation of Health. Gerontocomia*) (Galen 1725). This tradition continued for centuries to come.

In the European works on gerocomia, throughout the Middle Ages to the early modern period, the recommendation on dietary moderation was commonly a part of the more general moral instruction in Christian humility and moderation. Indeed, in the Christian tradition, “the seven deadly sins,” i.e. qualities that literally cause death—pride, greed, lust, envy, gluttony, anger, and sloth—have excess as their common basis. The avoidance of the sins corresponds to the moral and spiritual pursuit of longevity. With moderation, the corresponding “seven heavenly virtues” or “goods” can be attained—humility, liberality, chastity, kindness, abstinence, patience, diligence—that can be life-prolonging. As discussed by Thomas Aquinas in his fundamental work on Christian theology, *Summa Theologica* (1265–1274), the

vices (e.g. pride, gluttony, lust, greed) are simply goods in excess (honor, appetite, sexual intercourse, riches) (Aquinas 1920, *Summa Theologica*, 2:1, Question 84, Article 4). Thomas Aquinas generally was keenly interested in longevity, as a concomitant of moral living. As he stated: “in the state of innocence man would have been immortal” (*Summa Theologica*, 1, Question 97, Article 1) and “Death and other bodily defects are the result of sin” (2:1, Question 85, Articles 5–6). As moderation in food was seen as necessary for longevity, the complete avoidance of food, in the state of absolute purity, would be tantamount to immortality. In Aquinas’ words: “It would seem that in the state of innocence man did not require food. For food is necessary for man to restore what he has lost. But Adam’s body suffered no loss, as being incorruptible. Therefore he had no need of food” (2:1, Question 97, Article 3). Aquinas also proposed practical spiritual prescriptions for longevity, such as honoring one’s parents (2:2, Question 122, Article 5). Thus, the instruction on moderation, especially as regards the avoidance of the deadly sin of gluttony, has been a part of the general Christian ethics and theology.

The connection between moderation in food and religious ethics appears as a dominant motif in the available European works on longevity through the early modern period and later. A prominent example is the book by the Flemish priest Leonardus Lessius (1554–1623) entitled *Treatise of Health and Long Life (Hygiasticon)*, first published in 1613) positing the rules of moderate living (Lessius 1743). Notably, however, it has never been agreed what exactly a “moderate” measure is and how it is to be determined. Akin to the general religious doctrines that admitted of multiple interpretations, also the idea of moderation allowed a vast space for interpretation and controversy. Some rules of thumb for a correct “moderate” diet were sometimes proposed. Thus, for example, Lessius’ “Seven Rules for the better Discovery of this right Measure” posited that the meals should be less than would render the person “incapable or unfit for his mental employments.” The meals taken should not produce “dullness or heaviness of disposition.” If changing the diet, “it is to be done cautiously and by Degrees.” “For those, who are much advanced in Years, and for those also, that are of weak complexions, twelve or fourteen Ounces of Food a-Day are judged sufficient.” Any type of food may be good in small measure: “Any Sort of Food that is common to one suits agreeably enough with hale Constitutions, if so be not too much of it be taken at one Time.” The diet must be simple and uniform: “Every man should above all Things forbear Variety of Dishes, and the luxurious Artfulness of Cookery.” Finally, appetites should not be excessively aroused by the “Fancy of Imagination” (Lessius 1743, pp. 14–32). These rules are instructive, as even now, as 400 years ago, our concepts of moderation still largely rely on intuitions and subjective sensations, rather than precise measurements. They are also instructive in that they again emphasize that the mental state and perception are integral for any notion of longevity nutrition.

Despite the uncertainties regarding the exact “moderate” measure, the importance of moderation in diet, of consuming less than people usually do, has been emphasized by many Western authors writing about longevity throughout the Middle Ages and the early modern period. These include the Italian professor Gabriele Zerbi (1445–1505) who wrote a definitive work on Gerocomia, entitled *Gerontocomia, scilicet*

de senium cura atque victu (1489, “Gerontocomia, or, care and nutrition for old age,” written in Rome upon the request of Pope Innocent VIII, 1432–1492). Another stalwart of this tradition was the Italian long-lived writer Luigi Cornaro (1467–1566) who wrote the massively popular *Discorso sulla vita sobria* (Discourse on a sober life, first published in 1566) (Cornaro 1743). Also the German physician Johann Heinrich Cohausen (1665–1750), in his famous prolongevity work *Hermippus Redivivus or the Sage’s Triumph over Old Age and the Grave* (1742) argued that the “title to long life” is given by “temperance” (Cohausen 1744, p. 54). Many more examples of this tradition can be cited (Grmek 1958; Stambler 2019b).

The emphasis on moderation strongly influenced the ideology and practice of early modern hygienists who strove to extend longevity and preserve health in old age. Perhaps the most notable in this hygienic tradition was Christoph Wilhelm Hufeland (1762–1836), the renowned German hygienist, physician to the King of Prussia Friedrich Wilhelm III, and to Goethe and Schiller. In his book *Macrobiotics or the Art of Prolonging Human Life* (1796), Hufeland coined a particular term for the pursuit of healthy longevity—“macrobiotics” which has survived to the present (Wilson 1854). Hufeland specifically distinguished the art of longevity extension from the general medical art that commonly aims to treat individual diseases and symptoms and mainly considers short term effects. Hufeland asserted that the aim of macrobiotics is more long-term and holistic. As he wrote: “The object of medical art is health; that of the macrobiotic, long life. The means employed in the medical art are regulated according to the present state of the body and its variations; those of the macrobiotic, by general principles” (Wilson 1854, pp. vii–viii). Some of the general principles that determine human longevity, according to Hufeland, include: “the innate quantity of vital power,” “firmness of organization of the vital organs,” and the rates of “consumption” vs. “renovation” (“restoration” or “regeneration”) of the vital force and of the organs (Wilson 1854, p. 40). Moderation, in Hufeland, is an absolutely crucial means for the conservation of vital power. “Strengthening, carried too far,” he wrote “may tend to accelerate life, and consequently, to shorten its duration” (Wilson 1854, p. viii). Moreover, “the more intensively a being lives, the more will its life lose its extension” (Wilson 1854, p. 42).

Similar principles were professed by several European hygienists of the eighteenth century, such as the German-Latvian proponent of healthy longevity, Johann Bernhard Fischer (1685–1772), who served as “Archiatrus” (head of the ministry of medicine) of the Russian Empire and authored the book *On Old Age, its Degrees and Diseases* (*De Senior Eiusque Gradibus et Morbis*, first published in 1754, republished in 1760). In turn, the traditions of longevity hygiene of the eighteenth century formed the basis for the emergence of “Medicine for the aged” (*médecine de vieillards*) in France in the nineteenth century, and “Geriatrics” in the early twentieth century in the US (Grmek 1958; Stambler 2019b). In virtually all the works related to aging discussed so far, there has been expressed a strong urge for dietary moderation as a part of a prudent and ethical living.

Until the nineteenth century, perhaps one of the very few dissenters from this consensus about the need for moderation was the renowned French lawyer, physician and gastronome Jean Anthelme Brillat-Savarin (1755–1826). In his *Physiologie du*

goût (*The Physiology of Taste*, first published in 1825), Brillat-Savarin spoke of the “Longevity of Gourmands” and praised nutritional abundance (Brillat-Savarin 1854, pp. 194–196):

I am happy, I cannot be more so, to inform my readers that good cheer is far from being injurious, and that all things being equal, gourmands live longer than other people. This was proved by a scientific dissertation recently read at the academy, by Doctor Villermet [the hygienist Louis René Villerme, 1782–1863]. ... Those who indulge in good cheer, are rarely, or never sick. ... as all portions of their organization are better sustained, nature has more resources, and the body incomparably resists destruction.

In the longevity food culture up to the beginning of the twentieth century, that would be a rare exception that would celebrate hedonistic enjoyment, abundance and diversity of foods, rather than limitation and self-denial. Historically, in the older period, well until the beginning of the twentieth century, the vast majority of the authors rather valorized moderation and austerity in food consumption. It may be interesting to observe whether and to which extent the valorization of moderation was gradually superseded or supplemented by valorization of enjoyment, abundance and diversity of consumption as a means toward healthy longevity, in the more recent period. The evolution of ideas about longevity foods in the later modern period would require a more thorough investigation, beyond the scope of this work that focuses on the older magical, mythological, religious and historical traditions, and should rather not encroach into the territory of more up-to-date reviews. The question of evidence regarding the actual longevity benefits of limited vs. unlimited consumption is also beyond the scope of this work. The main argument of this work remains that, historically, the conception of longevity foods has not been a purely scientific one, but also a psychological, social and meta-scientific construct, involving questions of social good and ethical personal conduct.

20.7 Conclusion: The Need to Promote Longevity Nourishment in Social Context

As I have argued, beside purely scientific and evidential elements, the discourse on longevity foods has historically comprised a vast range of accompanying elements, from the social and mental domains, including cultural, educational, ethical, philosophical and religious aspects. The inclusion of such aspects into the discussion of longevity foods has created rich and colorful contexts, often involving quite fateful behaviors, movements, passions, special interests and conflicts. A more thorough elaboration of those contexts and conflicts would also go beyond the presently feasible scope.

As humorously noted by a mid-twentieth century German physician and longevity popularizer Gerhard Venzmer (Venzmer 1937, p. 127, my translation):

Unfortunately, one cannot write about nutrition without making some part of humanity his bitter enemies. A fanatic of a ‘correct nutrition’ makes no concessions, for him ‘his’ way of

nutrition is the only right one, and whoever thinks otherwise is an idiot, and possibly also a 'traitor to national health' or a 'paid agent of certain industries'. ... It is a shame how the fanatics of particular forms of diet, with every bite they take, constantly worry whether the food they consume is the 'right one.' They eventually feed themselves so 'healthy' that, through sheer anxiety, they cannot enjoy the 'health' that they buy so dearly.

Indeed, far from being a set of straightforward recipes detailing the lists of the correct foodstuffs that need to be consumed, their amounts and preparation procedures, longevity foods have often functioned as social actors, rallying points, slogans and advertisements, signs and symbols of individual and communal identity, directives for the personal and social rules of conduct. They involved not just "psychological-somatic" aspects, but much more encompassing "psychological-ideological-cognitive-social-economic-environmental-somatic" and many more integrally interrelated aspects. The concepts of longevity foods were adjusted to diverse social and ideological outlooks, depending on particular contexts and environments. It is important, for a thorough presentation of the subject, to consider longevity foods in such a rich multi-disciplinary context and promote a multi-disciplinary discussion. The present work, even though only initiatory and incomplete, has aimed to stimulate such a multi-disciplinary discourse.

Such a multi-faceted consideration may have practical implications, also in terms of health research and public health. A multi-disciplinary discourse may eventually contribute to a stronger scientific evidence for the effects of specific longevity foods, to their more efficient research, development and utilization. Thus, it may be often beneficial to distinguish actual scientific evidence for a particular longevity food, from the magical thinking that may be involved in its promulgation. Yet, in order to enable this distinction, it is important to recognize that there could be an element of magical thinking. Also to discern scientific evidence among special social and ideological interests, it is important to realize that there may be such social and ideological interests, not necessarily related to science. On the positive side, it may be important to empower individuals and the society, to engage social, psychological and cognitive resources that may be determinative for the effective development and beneficial and universal utilization of longevity foods. For that purpose, a better understanding of those multi-domain human resources and determinants is required. It is hoped that the present work will contribute to such a multi-disciplinary understanding, and thus to a more thorough engagement of the human capacity for the benefit of providing health and life-prolonging nourishment for all.

Compliance with Ethical Standards

Conflict of Interest The author declares that he has no conflict of interest.

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