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Changing Perception of Tea's Effects on the Body

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Tea (*camellia sinensis*) is a popular drink that has obvious physiological effects. It is therefore no surprise that quite early in the history of tea, it was already talked of as a potential medicine for certain illnesses as well as a remedy for physical maladies. In sixth-century China, pharmacopeia included the modern word for tea, *cha*, for the first time among the herbs that one could use as a part of the treatment of illnesses and diseases. Even earlier records refer to bitter plants using the word that was a precursor to tea, which may be references to the drink we so dearly love today.¹

Contemporary portrayals of tea in marketing and publications also emphasize the potential benefits that tea can confer on a drinker. Scientific studies have generally shown a modest possibility of tea being beneficial for various ailments, at least in the chemically extracted form of various components of tea.² Once this information reaches the popular press, however, the carefully qualified statements of scientists researching the effects of tea in very specific doses and applications give way to sometimes outlandish claims of curing every conceivable illness, from cancer prevention to weight loss, from better skin condition to increased brain function.³ This is reflected in the proliferation of products using some element of tea as a nominal ingredient. The association between tea and health in the mind of the average tea drinker is a strong one. Even in press reports the potential ills of tea are frequently mitigated by immediate claims that its benefits outweigh the risks.⁴

The historical record does not always contain such a positive association. Benefits of drinking tea were always countered by worries about its ill effects, which ranged from mild to serious. The purpose of this chapter is to explore and recover a lost narrative of the potential ill effects of tea on the human body, and in so doing help shed light on an area of food consumption that is normally seen as marginal. Tea, although ubiquitous, is not well studied because it straddles the boundary between food and medicine, and as a result does not strictly belong to either of these categories. Similar to Tatsuya Mitsuda's chapter on sweets in this volume, looking at how tea has been treated can help us find changes in the discourse surrounding ingestible items that are consumed on a day-to-day basis. Precisely because of the ubiquity of items such as tea and sweets, the changes in ideas about these items' effects can materially alter consumption patterns.

Specific to tea, this chapter argues that the discourse on the healthfulness of tea only changed decisively starting in the late nineteenth century, and this change is associated with the rise of scientific understanding of how food and drink influence the human body. In the past, writings on tea have included more nuanced pronouncements that could include some stern warnings about tea's potential harm to the human body that took into account differing circumstances of the drinker. The Chinese and Japanese have had a long history of drinking tea, and historically their understanding of tea's effects on the body was complex, accounting for individual constitution and receptiveness to the drink. As tea was exported to Europe, however, the new commodity created anxiety among British drinkers, who were suddenly obsessed with the drink. Worries about tea sprang up with fears that the drink caused bodily harm, alongside other undesirable effects that sometimes had little to do with the drink itself but linked to tea's having a moral, or amoral, dimension. The anxiety was real, even if the science behind it was not, but there was certainly worry that tea was not purely beneficial along with a sense that caution needed to be taken in drinking the beverage.

As traditional medical theories gave way to modern scientific medicine using molecular biology as an important analytical tool, however, the ways in which human beings have understood the effects of a certain substance on the body changed with it as well. Tea is no exception to this change. Modern medicine's claim of universality of the human body effaced the distinctions and exceptions made by earlier theories on the effects of tea. The causal relationship between constituent chemicals in tea and their

effects on the body also changed the way research on this subject has been conducted. Now when people speak of “tea” as a healthy drink, for example, it is no longer clear if it is really “tea” that is the drink that is healthy, or if it is merely the vehicle that delivers certain chemical compounds that are seen as beneficial. It is an example of how our changing understanding of diet and health has been transformed and calls into question what it means when a food item is referred to as healthy or otherwise. David Arnold’s account of how rice was treated by British authorities in India, for example, shows some similar parallels in which early worries about the potential harm of the food eventually gave way to a scientific understanding that reclassified it as no more “bad” than other grains. In tea’s case, perhaps because of its marginal status as a foodstuff, the work was not done by national health authorities but rather through the pages of advertisements that aimed to convince the end consumer that the drink was healthy and even beneficial for the human body. While the scientific literature remains inconclusive in its verdict on tea, to the average consumer it has certainly been reimagined to be a mostly healthy drink.

Traditional Medical Theories in China and Japan

The earliest examples of references to tea’s effects on the body came from China, the world’s first consumer of tea as a drink. These early records did not mention tea itself, as “tea” (*cha*) was not yet in use as a word. Instead it appeared under the guise of names such as *tu*, which denote a bitter plant that may refer to tea.⁵ According to Lu Yu (733–804) in his treatise *The Classic of Tea* (*Chajing*), the first book on tea written in the eighth century, the appearance of the character for tea, *cha*, did not appear until the early Tang dynasty (618–907), when it was included first in the *Phonetic Explication of Words in the Kaiyuan reign* (*Kaiyuan wenzi yinyi*). An even earlier word, *tu*, was used in the *Erya*, a dictionary that dates from around the third century BCE.⁶ While *tu* may not correspond perfectly to *cha* of later times, by early Tang it is clear that *cha* came from the word *tu*, as a Tang dynasty edition of the medical treatise *Commentaries on Materia Medica* (*Bencao jizhu*) used the term *tuming* to describe a plant that was most useful for combating sleepiness.⁷ This was certainly referring to tea, as *ming* was and still is an alternative name for tea, and one of tea’s defining characteristics, that of inducing wakefulness, is used as the major descriptor of this plant.

In the introductory section in *The Classic of Tea*, Lu Yu also discusses the basic characteristics of tea as a medicine. Tea, he says, is “most cold,” and suitable for those who are careful in their behavior. When encountering illnesses such as heat, dullness, headaches, dry eyes, or discomfort in the limbs, drinking a few sips will have the same effect as *tihu*, or morning dew. However, Lu Yu wrote, tea that is “harvested at the wrong time, produced with the wrong method, or mixed with other types of leaves” will not only be useless as a medicine, it will actually cause diseases.⁸ Two things are noteworthy here. The first is the determination of tea as a drink with cooling properties, an identification that persists in Chinese views of tea. The second is the claim that only properly produced tea will be beneficial; improperly processed tea will be harmful to the body.

The criteria set out by Lu Yu as proper production processes are rather stringent. The tea must be harvested between the second and the fourth lunar months (roughly between April and June). It must be grown in the right environment, with the appropriate number of shoots, and among the available buds only the best should be harvested. Teas should never be harvested on rainy or even cloudy days.⁹ Unfortunately, Lu Yu’s description of the production process itself amounts to no more than seven verbs: harvest, steam, mash, hit, roast, pierce, and seal. He gives no indication of what he would consider improper beyond what I just described above, nor what kind of harm would befall the unlucky fellow who drank tea that was badly made.

Following Lu Yu’s groundbreaking work, the subsequent history of writing on tea can be classified into three types. First are the occasional writings, which include all kinds of poems, jottings, notes, and other miscellaneous observations on tea. Second are the texts written by, and largely for, enthusiasts. Third are the medical texts that deal with tea in the context of medicine and the materia medica. For the purpose of understanding how people thought about the potential harm that tea could cause, the third type of writings is most informative in that it often includes information pertaining to tea’s medical effects. While the writings for enthusiasts are often the most detailed in their description of tea’s production and consumption methods, they are also focused more on the taste of the drink, and less on its effects.

In musings on the effects of tea on the body, few are more widely quoted than the Northern Song dynasty (960–1126) literatus Su Shi (1037–1101). Su Shi wrote a short section on tea included in *Notes from Chouchi*

biji that states that “to be rid of annoyance and fullness, tea is indispensable, but it also quietly hurt many people. I have a method, which is to use thick tea to wash one’s mouth after eating, which rids one of the remnants in the mouth while leaving the stomach and the spleen in ignorance [of the presence of tea]. The meat stuck between the teeth is melted and disappears, and the teeth are cleansed and are stronger. For this I use low- to medium-grade tea, and rarely good ones. Do it every few days and it is not harmful at all, and is very reasonable.”¹⁰ The idea that tea is unfit for frequent consumption is strongly implied here, especially as it is believed to harm the stomach and the spleen. By spitting out the wash Su was avoiding the ill effects of the tea while still gaining the benefit of cleansing his mouth. Unlike Lu Yu, Su does not qualify what he says with claims about the quality of the processing; tea seems to him to be a useful, but at the same time potentially harmful, thing to drink.

In the canonical *Systematic Materia Medica* (*Bencao gangmu*), Li Shizhen (1518–1593) of the Ming dynasty (1386–1644) explored all the effects of tea as part of his comprehensive treatise on medicinal herbs. Quoting from earlier texts, some of which are no longer extant, he describes tea’s effects as causing sleeplessness and weight loss. It should be drunk warm, he claimed, because cold tea would cause phlegm. One should avoid drinking tea with an empty stomach, after a great thirst, or after consuming alcohol, and avoid taking it at the same time with certain other herbs. This is not to say that tea had no medical value, but Li certainly had worries as well.¹¹

Li describes those concerns in well-articulated detail. He first describes the nature of tea as being “bitter and cold; it is *yin* of the *yin*.” If people with weak or cold constitutions, or people with weak blood, were to consume tea on a regular basis for prolonged periods, the spleen and the stomach would slowly take on hidden damage, which can cause all types of ailments, such as phlegm, bloating, weakness, yellowness accompanied by weight loss, vomiting, diarrhea, stomach pain, and so on. This recalls Su Shi’s solution to drinking tea, which also cites the spleen and the stomach as organs that would potentially be harmed by tea. Women are at higher risk for these ailments, and Li notes poignantly that because tea is a daily item, the harm it causes is often unnoticed because of its prevalence. He relates an anecdote that describes how when he was younger, he would often drink a few bowls of fresh tea until he sweated a little, and felt that it was good to do so. As he aged, however, his stomach’s *qi* had been damaged

a bit, and he could slowly feel the accumulated damage that tea caused. He would feel uncomfortable and want to throw up, his stomach would be cold, and he would suffer from diarrhea. He writes this down to warn others who also like tea.¹²

Other treatises that mention tea's medicinal properties also give neutral evaluations of tea's effects on the body. Zhang Lu's (1617–1699?) *Encountering the Sources of the Classic of Materia Medica* (*Benjing fengyuan*), compiled during the early Qing, quotes much of Li's work on tea, but also expanded Li's view in one respect in saying that drinking new tea (that is, tea produced in the current spring) could make one's voice unclear because it suppresses the fire in the body. Those who are cold by nature and easily fall prey to diarrhea should instead find substitutes.¹³ The idea that new tea should not be drunk immediately is echoed in Japan. Kaibara Ekken's (1630–1714) work *Lessons in Nourishing Life* (*Yōjōkun*) states in very clear terms that drinking new tea is harmful for much the same reason already stated. In particular, Kaibara recommends that new tea (*shincha* in Japanese) should be drunk only after the first lunar month, while those with stronger constitutions could begin drinking it after the tenth month. Since tea in Japan is normally harvested in late spring, around the third lunar month, not drinking the tea until the first month means waiting for almost a year. Failing to heed his advice might result in eye problems, anemia, or diarrhea.¹⁴ This in fact flies in the face of today's connoisseur wisdom that green tea should be drunk as fresh as possible, because this way it retains the most flavor. Japanese tea kept for a year would often be somewhat stale in comparison, and given storage technology in Kaibara's time, the staleness would have been even more pronounced. Nevertheless, Kaibara recommends such habits, revealing that his concern for the harm caused by tea is real.

In Zhao Xuemin's (1719–1805) *Supplements to the Systematic Materia Medica* (*Bencao gangmu shiyi*), compiled during the mid-Qing, there is also a substantial section on tea. The innovation here is that Zhao divided tea into different categories based on their respective properties, recognizing for the first time subcategories of tea that have different effects on the human body. One notable example for our purpose here concerns tea from the Wuyi mountain area in northern Fujian province. Zhao notes that the tea here is “black and the taste sour.” While other types of tea are generally cold and therefore unsuitable for those with weak stomachs, Wuyi mountain tea alone is “warm, and not harmful to the stomach.”¹⁵ Those who have stopped drinking tea for health reasons could drink this instead.

This new acknowledgment that not all tea is cold in nature is a reflection of changing tea production methods. Whereas up until the early Qing there existed only green tea, by mid-Qing other types of tea, notably black tea (fully oxidized), and later wulong tea (semi-oxidized), began appearing in written records. The introduction of these new production techniques meant that medical knowledge regarding tea needed to be updated. The reflection that wulong tea (and probably black tea as well) is of a different nature than green tea in medicinal property is not a surprising one. It also means that the warnings given previously about drinking tea in excess may change depending on the type of tea one drinks.

Other refinements appeared as well. For example, in *Updated Materia Medica* (*Bencao congxin*) by Wu Yiluo (1704?–1766), written during the same period as the *Supplements to the Systematic Materia Medica*, Wu explains that previous admonitions on the ills of drinking tea were really referring only to tea that was of poor quality. He believes that because tea comes from “the clearest *qi* under heaven and earth, and grows in sandy soil, cultivated by the dews and the mist, and unaffected by the dust and dirt of the world, this is why tea could clear the heart and mind and cleanse the stomach and spleen.”¹⁶ Previous writers, when they talked of tea causing weight loss, illness, and discomfort, were really focusing on teas that were bitter or astringent. Wu believes that if the tea drunk is “sweet [*gan*] and smooth [*xi*]” there is no problem. He also advocates using only tea that fits those two criteria when tea is called for in a medical formula. The “sweet and smooth” formulation is not seen in previous texts that I have consulted, and it is not clear what allowed Wu to make that determination. Sweet and smooth, however, is the typical profile of a good green tea. Wu therefore echoes Lu Yu in saying that good tea, properly produced and grown, is harmless. It is teas that are mishandled during processing or growing, or are inferior in some other way, that cause problems.

When comparing Wu’s interpretation with Li Shizhen’s writing, however, one cannot help but conclude that there is no implication of quality in Li’s account; tea is simply unsuitable when drunk too much or when it does not fit one’s constitution. Li never mentioned the quality of the tea itself when speaking of its potential harm. The unqualified claim that tea, when drunk excessively or when the body’s constitution does not fit the drink, could be bad for you therefore seems to be the mainstream opinion among those whose focus was on its medicinal properties, with an important dissent among aficionados that tea was fine so long as it was made

properly. The introduction of new tea types also made it more difficult to make a blanket statement on the general effects of tea on the human body. The appearance of Wuyi tea as a separate, safe category, for example, reflects the evolution of tea production technologies that led to the emergence of new types of teas, further complicating medical understanding of tea's effect on the body. However, there is a broad consensus that tea is cold in nature, and that it affects the stomach and spleen in a certain way. Excessive consumption is also high on the list of commonalities among the claims made. The idea that tea is a healthy drink with no reservations does not seem to be rooted in East Asian medical tradition.

Changing Perspectives

If the idea of tea as inherently healthy did not originate in East Asia, then where did it come from? As the rise of scientific medicine came from Europe, it is instructive to see how tea was treated there and how conceptions of its effects on health changed over time. The largest market for tea in Europe was, and still is, the United Kingdom. Tea was introduced there sometime in the mid- to late seventeenth century, and drinking it quickly became a daily routine for many, as attested by the import data of tea over the period, which showed exponential increase in the amount imported by the East India Company in the early eighteenth century.¹⁷ The publication of a large number of books on the subject of tea also coincided with this increase in consumption, as readers were curious as to the effects of this drink. The change in how tea was perceived by British writers on the subject illuminates the larger changes that took place in our understanding of how food can affect the body upon consumption.

An early extant book in English touching on tea is *An Essay on the Nature and Quality of Tea*, which noted the various beneficial effects of tea on the body. The author, John Ovington, a chaplain to Queen Anne (r. 1702–1707), was adamant that tea was good for the digestive functions of the body. To illustrate such a point, he noted that among the “Tartars” of China it was common to eat raw horsemeat, and because of the particularly hardy constitution of the body of these Tartars, they were able to digest it just as easily as the British do boiled or roasted beef. However, even they would sometimes suffer from digestive problems, and “they readily apply themselves to Tea, without consulting any other Physick; and in this

way find so much Relief, and their Appetites are so effectually strengthened, that they soon recover their Digestive Faculty.”¹⁸ In fact, Ovington goes so far as to claim that tea is able to literally dissolve meat, thus explaining its digestive aid properties.¹⁹

This anecdote is no doubt used to illustrate the efficaciousness of tea as a digestive aid, but at the same time, Ovington notes that the “stout and robust Tartars,” with their strong constitutions, were more able to take advantage of tea’s virtues than the “delicate and soft Chinese.”²⁰ He seems to suggest that there is some differentiation between different groups of people, and that one universal effect was not applicable to all. The British, Ovington claims, had similar problems as the Tartars, and would therefore benefit from drinking more tea. In his conclusion, he also made it very clear that he did not consider tea to necessarily be good for all people; a person’s constitution was crucial in determining whether or not tea was to be a beneficial drink.

Ovington’s tone is very much an introductory one; tea was not yet imported in large enough quantities for it to be a national drink, and many of his readers would not have had much personal experience with it. His position as court chaplain must have been instrumental in giving him access to this otherwise rare drink, and it is quite possible that his work thus contained a certain amount of advocacy in addition to description. As tea became more common, however, attitudes also changed, as did the line of inquiry and investigation on the health effects of tea on the body. Whereas Ovington generally used what amounted to hearsay to substantiate his claims, later writers began conducting scientific experiments and constructing elaborate theories of why tea was good or bad for the body.

These subsequent researchers did not all share Ovington’s enthusiasm for tea. One such type of writing is the anonymous *An Essay on the Nature, Use, and Abuse of Tea, in a Letter to a Lady*.²¹ In this work the author seems to be a physician, or at least someone familiar with medical theories of the time. The basic problem with tea, he claims, is that it deprives a person of his spirit by thinning and then “depauperating” the blood.²² Focusing on the diuretic effects of tea, the author argues that thinning the blood and the consequent increase in attention and mental acuteness are in fact temporary, and that they merely deplete a person of the finite supply of spirit that he or she possesses. Such depletion, ultimately, causes what this anonymous author termed “hypochondriack disorders,” with symptoms such as nervousness, fear, social withdrawal, and other similar problems

that modern medicine would generally classify as a mental illness or anxiety disorder.²³ In contrast, alcohol increased a person's spirits and was therefore beneficial to health.²⁴

There is an interesting sexual dimension to this line of argument regarding tea's ill effects on health, which may perhaps explain the use of the device of a "letter to a lady." The second half of this work concerns itself chiefly with the reproductive functions of men and women, and tea's negative influences on them. Many effects—from the possibility of miscarriage to conveying "crudities" to the child by the abuse of tea to the suppression of the production of milk—are blamed on the use of tea by women during and after childbirth.²⁵ Likewise, men were said to have suffered from a diminished "prolifick energy" as a result of drinking too much tea.²⁶ The root cause of these illnesses is the dilution of blood and the attendant problems that arise from the body's deviation from its natural state.

Experimentation and somewhat more scientific approaches began appearing around this time as well, partly because tea was becoming a widely available commodity and therefore easily obtained for research. Thomas Short, a medical doctor, performed a number of experiments that attempted to discern the nature of tea, and his work *A Dissertation upon Tea* concludes with an overwhelmingly positive endorsement of the drink as beneficial to health. According to Short, the list of possible diseases that tea could treat is long, and he summarizes the effects of tea on each of them. Diseases that are related to blood, obstruction of the lungs, coughs, flatulence, and stones are noted as serviceable by tea.²⁷ Gout and scurvy are also noted as being treatable with tea, the first no doubt as a diuretic, and the second because tea contains vitamin C, although this was not known at the time.²⁸ At the same time, Short believes that differing constitutions would result in different outcomes, and that those who were "Phlegmatick and Melancholy" were particularly well suited to tea, while women were also better suited than men.²⁹

A more scientific objection to the use of tea can be found in John Lettsom's *The Natural History of the Tea-Tree, with Observations on the Medical Qualities of Tea and Effects of Tea-Drinking*. Lettsom, also a medical doctor, conducted a number of experiments and interviewed a number of people who were knowledgeable in the matter, and came to an interesting conclusion with regard to tea. Lettsom wrote that the Chinese were "described to be pusillanimous, cunning, extremely libidinous, and remarkable for dissimulation and selfishness, effeminate, revengeful, and dishonest."³⁰

Then he speculated that perhaps the general diet of a place gradually changed the outlook of a nation. In this case, the use of tea had increased this sort of disposition to make the Chinese the way they were. This echoes earlier concerns about tea causing nervousness and other mental illnesses, and perhaps also reflects the gendered approach to tea as the drink associated with females rather than males.

Up until this point, British writing on tea differed from Chinese or Japanese writing only on specifics but perhaps not in general principles; tea was held to have effects on the body, but precisely what it did to the body was dependent on individual circumstances and constitutions. Some were more susceptible to the negative influences of tea, while others were more immune to them and could derive benefits from drinking tea. By the nineteenth century, information in English-language sources regarding tea had become more accurate, at least insofar as China and the tea customs there were concerned. In books such as *Tsiology: A Discourse on Tea*, there are descriptions of the product and its manufacture by someone who may have actually traveled to China himself, or at the very least received firsthand information from reliable informants. Medical approaches to tea also became more systematic. After over a century of drinking tea, observers of the drink were by then aware that tea probably did not produce the severe negative effects feared in the past, especially when it comes to hysterics or other oddities.

At around the same time there were also new ways of analyzing tea and its effects on health that reflect changing medical practices and our understanding of the human body. Whereas writings on tea during the eighteenth century generally rested upon theories of medicine based on one's humors, the free flow of blood, and the excretion of spirits, by 1863 there was evidence of an approach to tea that was much closer to modern-day analysis of the drink. In *Popular Treatise on Tea*, author John Sumner summarizes much of the previous writings on the subject. At the same time, he introduces a new description of tea previously unseen: he includes a chemical breakdown of the components of tea leaves.³¹ He identifies three things—theine, volatile oil, and tannic acid—as components of tea that have active effects on the body.³² Breaking tea into its component parts is the beginning of a process whereby modern medical science dissects the plant down to the molecular level, and assigns tea's medicinal effects based on said molecules. Although Sumner's work is only rudimentary, it gives us a temporal marker for when the discussion of tea in a

holistic fashion transitioned to a more atomistic approach. No doubt this is part of larger changes in Western medical practices, but it does begin a process that has changed the way tea is described and studied from a medical perspective.

The reception of tea in Britain, as reflected in publications on the subject, shows us what is perhaps a typical pattern in the introduction of any new food item into a diet. The initial reaction to tea was confused, with both positive and negative opinions being proposed but little substantive arguments being laid down other than what amounts to hearsay and wild theories. The information available on the subject was scarce, and much of it was probably copied from one source to another—with little ability to verify the truthfulness of each statement. As time progressed and tea became more familiar, writings on the subject also became more sophisticated but not necessarily more accurate. The most significant development in the course of studying tea's effect on the body is one that begins to treat the drink not as a whole but as component parts. The scientific analysis of tea as a mixture of different kinds of molecules fundamentally changes how one is to study and understand tea in particular, and diet in general.

Importation of Scientific Analysis in China and Japan

The new way of analyzing tea based on molecular chemistry quickly made its way to Asia. The earliest such work I have been able to find is a Japanese translation of John Campbell Riley's *A Compend of Materia Medica and Therapeutics for the Use of Students*. The translation was published in 1871, and contains the first mention of caffeine and tannin regarding tea that I could find in any East Asian literature. Ten years later, in 1880, a Japanese article appearing in the inaugural issue of *Journal of the Tokyo Chemistry Association* (*Tokyo Kagaku kaishi*) was the first extant indigenous research on the subject. The article, titled “Nihon seicha no bunseki setsu” (Analysis of Japanese tea production), discusses in great detail various chemical components that are inherent in the tea plant. The author especially pays attention to introducing concepts that are obviously not widely known to the target audience, taking time to explain to the best of his knowledge what caffeine and tannin were.³³ The author then performs a series of tests on teas obtained from various Japanese producers, and attempts to compare

teas made in Japan in terms of the chemical composition of the final product, with a special focus on the differences between green and black tea.³⁴ Although Japan largely produced green tea, black tea was more popular as an export item, and the comparison was included partly to show the contrasts in the active components of these two products.

Coinciding with the shift in approach to studying tea were changes in the discourse surrounding tea's effects on the human body. One such change is the beginning of a trend to group tea with other similar stimulants, including alcohol, coffee, and sometimes tobacco. Two works published in 1878 and 1879, the first titled *Study of Medicine: Learnings of Daily Lectures* (*Yakubutsu gaku: Nikkon kibun*) and the second *Conversations on Nourishing Life* (*Yōjōdan*), briefly discuss what tea does to the human body and offer contrasting views that are indicative of the traditions on which both works are based. On the one hand, *Study of Medicine*, a work originally written by Dr. Christian Jacob Ermerins, a Dutch doctor who came to Osaka in 1870, translated by Mise Morobuchi, and published by the Osaka Public Hospital, groups tea with coffee, and discusses the alkaloids in the two drinks, the presence of caffeine and its stimulating effect, as well as tannins. Collectively, these chemicals disrupt the mucus lining of the stomach and the tannins can hinder digestion of proteins, therefore neither tea nor coffee aids digestion at all.³⁵ While both drinks help with alertness, they disturb sleep and as a result can lead to mental weakness, headaches, heart palpitations, and other similar nervous problems. Moreover, the author maintains that as tea is the weaker of the two drinks, it has little medical value and it is rare to see it used as a medicine.

Conversations on Nourishing Life, on the other hand, written by Kubo Yoshihito, an otherwise anonymous author, places tea between the sections on alcohol and tobacco, and mentions how tea helps to encourage one's alertness and aids digestion, but if drunk in excess can hurt one's digestive capabilities. Kubo also mentions tannins but speaks of them as a type of "essence" that comes from the body of plants. They serve to help relax the body and in moderation can help one's health.³⁶ These two opposing views are not exactly reconcilable. Part of this may be cultural; Ermerins, the foreigner, had little good to say about tea. His approach is also more scientific in tone and speaks of the effects of tea and coffee in a mechanical manner. Kubo, in contrast, is more favorable toward tea, and his brief description of tannin is almost mystical in nature, retaining the

language and style of earlier tracts based on traditional East Asian medical understanding.

In the subsequent decades a slew of different articles appeared in Japan that followed the same line of inquiry in studying the components of teas, many of which were also published in the *Journal of the Tokyo Chemical Association* as well as in other publications, such as the *Journal of the Pharmaceutical Society of Japan* (*Yakugaku zasshi*). The topics covered were varied, including caffeine, protein, the amount of sugar contained in tea, and the temperature at which tea's enzymes become deactivated.³⁷ The exploration of active chemical compounds slowly grew more sophisticated. Scholars who were trying to understand tea's various components were getting an increasingly better sense of what was in the tea, of how much of these various compounds existed in teas that were produced in different places or with different techniques, and what were some of the conditions that affected the quantity of these compounds.³⁸ Most of these articles were produced locally by Japanese scientists, while a few were translations of works by foreigners. In comparison, prior to 1910 it is virtually impossible to find in Chinese anything equivalent on the subject; it seems that within East Asia the scientific study of tea originated in Japan.

Not surprisingly, the classical ideas of "hot" and "cold" as criteria for judging tea and its effects on the human body receive no attention at all in these articles, and are also increasingly hard to find in other venues. The import of Western medicine and the new language of scientific, molecular biology did change the way people think about tea and its effect on the human body. The jury, however, was still out on whether these compounds were ultimately beneficial to the human body. Researchers knew they existed, but it was not yet clear what they were doing to us. In the late nineteenth century it was still possible to find those who believed that tea could be very harmful. In a book called *Questions and Answers on the Benefits and Harms of Food and Drink* (*Inshoku rigai mondō*), the section on tea and coffee concludes with the insight that both caffeine and tannin were "poisons" (*dokubutsu*) that would hurt the heart and nervous system. Frequent ingestion of these two substances was not recommended. Also, there were other unspecified components that would inhibit digestion, therefore people who are used to drinking coffee and tea should try to reduce the amount of intake, and also perhaps dilute them if they are normally drunk in concentration.³⁹ Although the target of study has changed

from tea to its constituent components, the exact effects of tea on the body still elude precise description.

“Tea Is Healthy”

The science behind tea’s effects on the body has always been somewhat inconclusive. Whether it be traditional medical theories that tailored the response to individual constitution or more universal claims of benefit or harm depending on chemical components, the verdict on tea was always somewhat ambiguous. Modern medical research on tea, in which claims of health benefits are often offset by mitigating factors, exemplifies this balanced approach to the drink’s efficacy in promoting health. The general public, however, is not so swayed by technical studies of a scientific nature. Rather, they come into contact with an array of publicity materials designed to entice people to drink tea. And in this regard, the portrayal of tea is overwhelmingly positive.

The use of scientific language in support of tea being healthy as presented to the general public is most clearly shown in a booklet produced by the Mitsui tea corporation in 1926 to promote Taiwanese *wulong* tea in Japan. It used precisely the new, scientific language to talk about tea’s beneficial effects on the human body. The booklet is a collection of customer testimonials about the superiority of Taiwanese *wulong* tea, so a certain amount of boosterism is to be expected. One essay, attributed to a female drinker, “SS-ko,” talks about how her older brother’s weak nerves and digestive problems were cured by the drinking of Taiwanese *wulong* tea, whereas all other types of teas failed to help and were in fact harmful.⁴⁰

In 1935, Wu Juenong, a prominent tea expert during the Republican and Communist periods, and Hu Haochuan, a technical expert in tea at the time, coauthored a book titled *Plan for Reviving the Chinese Tea Industry* (*Zhongguo chaye fuxing jihua*). The book was a response to China’s increasingly marginalized position on the world tea market, having been displaced by India as the biggest producer, and beaten by Japan and Taiwan in pricing power and quality. In an introductory chapter Wu and Hu discuss the importance of the tea industry to Chinese citizens. The language follows the scientific approach of analyzing constituent components, with discussions of alkaloids, catechins, caffeine, vitamins, and other

molecular compounds that are part of tea's infusion. The book was probably not the first to use these terms in describing tea in China, but is representative of the changing way of thinking about tea's biological function. Having discarded the old categories of analysis, Wu and Hu instead use language and concepts derived from an entirely different tradition and ascribe various functions of tea to these compounds.⁴¹

Notably, Wu and Hu did not mention a single negative property of tea in the introduction. Of course it was not in their interest to emphasize the negative aspects of tea consumption, especially in relation to overconsumption, but it is also indicative of the general trend of writing on tea in the twentieth century. Locating discussions of tea as a harmful drink becomes increasingly difficult the further one progresses into the twentieth century, at least until worries about external factors, such as pesticide residues, began to become an issue. One of the few articles about potential harm from tea was published in 1962 and written by Shen Zhonggui, a noted traditional Chinese medicine doctor. The article simply regurgitates and quotes old Chinese medical texts verbatim and adds in simple commentary that agrees with the writing.⁴² Much more prevalent are articles that blend Chinese and Western traditions in talking about the health benefits or negative effects on tea. For example, in an article on tea's medical uses that appeared in the *Chinese Journal of Medicine* in 1953, the author cites Chinese medical classics such as the Han dynasty text *Sources of the Classic of the Divine Farmer* (*Shennong benjing*), the Tang dynasty *Supplements to Materia Medica* (*Bencao shiyi*) by Chen Cangqi (681–757), and other classics to discuss tea's effects. However, he then uses the new scientific medical language of chemical compounds to explain why these effects exist. Chemicals such as caffeine, alkaloids, tannins, and vitamins are credited with giving tea its medical effects even though these are explained in traditional medical terms.⁴³ Works using Chinese medical theories generally remain within the confines of Chinese medical journals; academic research is overwhelmingly focused on the scientific aspect of tea's medical uses. The situation has become even more lopsided in recent years as the number of publications has exploded since the 1980s. For example, since 2000 over seven hundred articles have been published on the effects of tea polyphenols alone in Chinese journals.⁴⁴

It is worth asking here if the terms of engagement are still the same as before with regard to understanding tea's effects on the body. Using molecular biology to analyze health effects, whether in tea or in other

consumables, leads to questions about whether or not tea is still functionally at play here as an agent that causes these observed or perceived effects, or if it is merely a vehicle that delivers these compounds. When the active ingredient is caffeine, tannin, or polyphenols, then drinking tea is functionally not much different from taking a pill with the right amounts of each of these molecules. Unless there are compounds that are specifically produced in tea and nowhere else, what causes changes in the body is no longer the tea itself but whatever constituent part is contained in a tea leaf. Tea just happens to produce these compounds in specific relative quantities. When researchers have published seven hundred works on tea polyphenols, is it really tea that is of interest, or merely a small chemical component found naturally in tea? This is qualitatively different from the holistic understanding of tea drinking found in earlier texts. Researchers now establish causal relationships between specific chemical compounds and bodily functions. The beverage is merely the form in which this chemical is consumed.⁴⁵

Conclusion

In East Asia, where tea was first drunk, historical evidence shows that there was a healthy debate as to whether or not the drink was appropriate for everyone, or if it was appropriate only for some people. Theories of health were based on one's constitution, body type, and receptiveness to tea's medical properties. The conclusion was generally that there were qualified uses for tea, but it was hardly a universally acceptable health drink. As modern scientific medicine took root, however, the study of tea's health effects became focused on its component parts. Tea was broken down into an aggregate of compounds to be investigated individually. Some of these compounds may be more beneficial than others, but it is no longer clear if tea is the object being discussed. To this day, scientific inquiries that conclusively prove tea's health benefits remain elusive.⁴⁶

At the same time, in the popular press there are still frequent mentions of tea as a healthy drink. Older ideas of "hot" and "cold" and the harm that tea could do to the body, as explained by traditional East Asian medical texts, have been largely discarded in favor of the healthy narrative that is partly driven by marketing needs.⁴⁷ Molecular biology's focus on individual compounds only serves to give a veneer of scientific

rationality to claims made by product marketers, something that governing authorities in public health have slowly become aware of as an area that requires greater regulation. It is telling that the US Food and Drug Administration's only enforcement of health claims related to tea are about how inconclusive research has been on the linkage of tea to its ability to prevent cancer.⁴⁸

In the end though, it was the idea that tea is healthy for all that prevailed. While narratives of tea's potential ills do exist, worries have mostly shifted from inherent problems with tea to externalities such as pesticide residues or bleach in the paper used in teabags.⁴⁹ The change in tone has as much to do with marketing as anything else; the Mitsui tea company's promotional material, with testimonials from anonymous drinkers, was certainly not scientific, but it drew on the language of the newly developed science of tea chemistry. Likewise, Wu Juenong's discussion of how tea was important for the people of China, and thus became a basis for his urge to reform the tea industry, relied on this new language of science, rather than traditional notions of medical efficacy for individual patients. Contemporary press on tea is awash with claims of its health benefits to various parts of the body. In the course of a century, in the public imagination tea had become healthy for the drinker even as the science behind it remains elusive.

Notes

1. Iwama Machiko, *Cha no yiyakushi—chūgoku to nihon* (Tokyo: Shibunkaku, 2009), 3–18.

2. Carrie Ruxton, "Emerging Evidence for Tea Benefits," *Nutrition Bulletin* 38, no. 3 (2013): 287–301; Raymond Cooper, D. James Morré, and Dorothy M. Morré, "Medicinal Benefits of Green Tea, Part I: Review of Noncancer Health Benefits," *Journal of Alternative and Complementary Medicine* 11, no. 3 (2005): 521–528; Raymond D. Cooper, James Morré, and Dorothy M. Morré, "Medicinal Benefits of Green Tea, Part II: Review of Anticancer Properties," *Journal of Alternative and Complementary Medicine* 11, no. 4 (2005): 639–652.

3. The language is usually couched in overly enthusiastic claims of health benefits, while still retaining words such as "might" and "may" to make it obvious that the claims made are not proven. For example, see Laura Newcomer, "13 Reasons Tea Is Good for You," *Time.com*, September 4, 2012, <http://healthland.time.com>; Linda Carroll, "How a Daily Cup of Tea May Improve Your Health," *Today.com*, June 24, 2016, <http://www.today.com>.

4. For example, see Luisa Dillner, "Is Drinking Tea Bad for You?" *Guardian*, April 1, 2013, <https://www.theguardian.com>; "Tea: Is It Good or Bad for You?" *Telegraph*, June 18, 2010, <http://www.telegraph.co.uk>.

5. Victor H. Mair and Erling Hoh, *The True History of Tea* (London: Thames & Hudson, 2009), 282–288.
6. Lu Yu, *Chajing*, in *Zhongguo lidai chashu huibian*, ed. Cheng Pei-kai and Zhu Zizhen (Hong Kong: Shangwu yinshuguan, 2007), 8.
7. Iwama, *Cha no yiyakushi*, 8.
8. Lu Yu, *Chajing*, 8.
9. Lu Yu, *Chajing*, 9.
10. Su Shi, *Chouchi biji*, In *Siku quanshu*, vol. 863 (1782; repr., Shanghai: Shanghai guji chubanshe, 1987), 18b–19a.
11. Li Shizhen, *Bencao gangmu* (1596; repr., Beijing: Huaxia chubanshe, 1998), 1256.
12. Li Shizhen, *Bencao gangmu*, 1257.
13. Zhang Lu, *Benjing fengyuan* (1695), facsimile reprint in *Zhongguo bencao quanshu* (Beijing: Huaxia chubanshe, 1999), 3:66b–67b.
14. Kaibara Ekken, *Yōjōkun* (1712), section 454, accessed October 10, 2014, <http://www.nakamura-u.ac.jp>.
15. Zhao Xuemin, *Bencao gangmu shiyi* (Hong Kong: Shangwu yinshuguan, 1971), 252.
16. Wu Yiluo, *Bencao congxin* (1757), facsimile reprint in *Zhongguo bencao quanshu*, vol. 109 (Beijing: Huaxia chubanshe, 1999), 10:14b.
17. A Tea Dealer, *Tsiology: A Discourse on Tea* (London: W. M. Walker, 1826), 96–102.
18. John Ovington, *An Essay upon the Nature and Qualities of Tea* (London: John Chantry, 1705), 24–25.
19. *Ibid.*, 26.
20. *Ibid.*, 25.
21. Anonymous, *An Essay on the Nature, Use, and Abuse of Tea, in a Letter to a Lady; with an Account of Its Mechanical Operation* (London: J. Bettenham, 1722).
22. *Ibid.*, 16, 18–20.
23. *Ibid.*, 12.
24. *Ibid.* 39.
25. *Ibid.*, 44–51.
26. *Ibid.*, 52.
27. Thomas Short, *A Dissertation upon Tea* (London: W. Bowyer, 1730), 48–57.
28. *Ibid.*, 58.
29. *Ibid.*, 61–62.
30. John Coakley Lettsom, *The Natural History of the Tea-Tree, with Observations on the Medical Qualities of Tea and Effects of Tea-Drinking* (London: Edward and Charles Dilly, 1722), 57.
31. John Sumner, *Popular Treatise on Tea* (Birmingham, UK: William Hodgetts, 1863), 28.
32. *Ibid.*, 29–32.
33. Takayama Jintarō, “Nihon seicha no bunseki setsu,” *Tokyo kagaku kaishi* 1 (1880): 3–6.
34. *Ibid.*, 11–13.
35. Christian Jacob Ermerins, *Yakubutsu gaku: Nikkō kibun*, trans. Morobuchi Mise (Osaka: Osaka kōritsu byōin, 1878), 7:19b–20b.
36. Kubo Yoshihito, *Yōjōdan* (Osaka, Japan: Sekigyohō, 1879), 40–41.

37. In the subsequent decades dozens of such articles were published in Japan on a wide variety of topics related to the chemical composition of tea leaves. A few examples are Moriya Monoshirō, “Chaba no hitanpaku chisso shichimotsu no kenkyū” (Study of the content of nonprotein nitrogen in tea leaves), *Tokyo kagaku kaishi* 11 (1890): 79–83; Shimoyama Junichirō, “Nihoncha baiyō setsu fu kofein teiryō hō” (Discussions on the cultivation of Japanese tea, along with a measurement method for caffeine), *Yakugaku zasshi* 50 (1886): 140–151; and Moriya Monoshirō, “Chaba no seibun to rokucha kyu kocha no seibun no kankei” (Relationship between the contents of green and black tea), *Tokyo kagaku kaishi* 10 (1889): 240–246.

38. Again, there is a large number of such articles. Some examples are Sawamura Shin, “Chaba no tōbun ganryō ni kansuru chōsa” (A study concerning the amount of sugars in tea leaves), *Nōji shikenjō hokoku* 35 (1909): 43–45; Sawamura Shin, “Seicha ni kansuru kagaku teki kenkyū” (A study of the chemistry of tea making) *Nōji shikenjō hōkoku* 43 (1919): 58–79.

39. Kaishundō, *Inshoku rigai mondō: Mubyōkiso* (Tokyo: Nakamura Zenshichi, 1889), 12–13.

40. *Uroncha no aiyōsha to narumade* (Tokyo: Mitsui chagyō, 1928), 7–10.

41. Wu Juenong and Hu Haochuan, *Zhongguo chaye fuxing jihua* (Shanghai: Shangwu yinshuguan, 1935), 9–15.

42. Shen Zhonggui, “Cha zai yiliao shang de gongyong he yincha de libi,” *Jiangsu zhongyi* (December 1962): 30–32. Shen was a noted traditional Chinese medical doctor who worked at the Chinese Academy of Chinese Medical Sciences (Zhongguo Zhongyi Yanjiuyuan).

43. Tao Guang, “Cha de yiyao xiaoyong,” *Zhongji yikan* (March 1953): 92–94.

44. The search was done on CNKI’s Chinese journal database, the China Knowledge Resource Integrated Database, accessed August 30, 2018, <http://oversea.cnki.net>.

45. I am grateful for Dr. Wu Yu-chuan for his comments during a conference in Taipei in 2015 for raising this point on an earlier draft of this chapter.

46. A recent summary of metastudies on various aspects of tea and supposed health benefits can be found at Aaron E. Carroll, “Health Benefits of Tea? Here’s What the Evidence Says,” *New York Times*, October 5, 2015, <http://nyti.ms>.

47. Yin Guimao, *Chatong* (Tianjin, China: Tianjin keji fanyi chubangongsi, 1989), 164–165; Lin Qianliang and Xi Yumei, *Yangsheng chashou* (Hong Kong: Jinhui chubanshe, 1992), 151–152.

48. Center for Food Safety and Applied Nutrition, “Labeling and Nutrition—Summary of Qualified Health Claims Subject to Enforcement Discretion.” US Food and Drug Administration home page, accessed August 30, 2018, <http://www.fda.gov>.

49. Megan Griffith-Greene, “Pesticide Traces in Some Tea Exceed Allowable Limits,” *CBC News*, March 8, 2014, <http://www.cbc.ca>.