Healing with Poisons
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CHAPTER 4

Medicines in Circulation

Hence we follow the imperial edict from above and solicit various opinions from below. Promulgating the order under heaven, we seek and pursue medicines.

—NEWLY REVISED MATERIA MEDICA (659)

In 657, a scholar-official named Su Jing presented a proposal to Emperor Gaozong, the third monarch of the Tang dynasty. The materia medica compiled by Tao Hongjing a century and a half earlier, he claimed, contained numerous mistakes and hence had to be revised. Convinced, the emperor issued an edict to call together a team of twenty officials tasked with producing a new pharmacological text. In the following two years, the team set out to collect medicines from all corners of the empire, based on which they modified the older drug knowledge, creating updated descriptions and illustrations of these substances. At the beginning of 659, a new pharmacopoeia of fifty-five scrolls was completed and submitted to the emperor, who was pleased and ordered its storage in the imperial library.1

The book, titled Newly Revised Materia Medica (Xinxu bencao), is significant in the history of Chinese pharmacology as the first government-sponsored materia medica in China. The text emerged during the early Tang period (618–755), a period that saw the establishment of a vast empire that enjoyed political stability, economic growth, and cultural flourishing.2 During this favorable period, the state took an active role in the promotion of medicine, manifested in the building of new institutions, the expansion of a tribute
system, and the creation of new and authoritative texts. This state’s effort toward new medical regulation was epitomized by *Newly Revised Materia Medica*, which offered the first empire-wide survey of drugs to standardize pharmacological knowledge and guide medical practice.

In this new political environment, potent medicines figured prominently at the intersection of the state and pharmaceutical practice. Given their crucial role in healing, the Tang court collected a set of potent drugs from across the empire through an extensive tribute system, which was an imperial network for the acquisition of natural or manufactured products from local regions. It also tried to standardize the knowledge regarding identifying these drugs and strategies for deploying them in *Newly Revised Materia Medica* in order to forestall the misuse of them in practice, a concern already visible in the fifth and sixth centuries due to the increased specialization of pharmaceutical activity (see chapter 2). Making use of poisons was never a relaxed matter; their potential to kill, either by accident or on purpose, constantly posed a threat to the imperial order. Correspondingly, the state created specific legal codes to regulate the use of poisons and prevent them from falling into the wrong hands.

If the Tang central government developed institutional, legal, and textual measures to standardize drug knowledge and regulate medical activities, what about the situation in local regions? Given the vastness of the Tang empire in the seventh and early eighth centuries, with its territory extending to the far south and to central Asia, there existed considerable variation in pharmaceutical practice that was contingent on climate, geography, the availability of resources, and customs. Pharmacological knowledge produced at the imperial center spread fast to the far ends of the country and beyond, manifesting the majestic power of the state. Yet such knowledge, once it reached remote communities, was subject to rapid transformation shaped by regional conditions and the specific needs of local actors.

**Regulation of Medicines by the Tang Court**

The institutional supervision of medical practice has a long history in China. The ancient text *Rites of Zhou* (*Zhouli*, ca. third century BCE) already described specialized departments dedicated to food preparation and treating internal disorders, lesions, and animal maladies as integral elements of the royal bureaucracy. The vision was partly implemented in the Eastern Han
period, when the court established offices for the supervision of healing practices and the preparation of drugs for the imperial family and court officials. Furthermore, the Han rulers relied on a system of patronage to recruit capable healers across the country who could provide excellent medical service. Driven by a passion for the practices of immortality, many of these rulers were keen to recruit those who claimed mastery of these occult arts. Upon gaining imperial trust, these adepts often assumed nonmedical positions in the central government. Medicine, therefore, was a means for them to enhance their social prestige and fulfill their political ambitions.3

This pattern persisted during the Era of Division. This period saw the rise of hereditary medicine, traditions of medical practices transmitted within aristocratic clans, especially in the south, which produced influential physicians, many of whom enjoyed imperial favor and took up governmental posts. The majority of these appointments, however, were unrelated to medicine, probably because the medical bureaucracy at the time was still limited.4 The situation changed during the Sui-Tang period, when the state substantially remodeled and expanded medical institutions that systematically selected and trained various types of physicians.

According to The Six Ministries of the Tang Dynasty (Tang liudian, 739), a court document that outlined the administrative structure of the central government, three institutions were established during the Tang dynasty. The first was the Imperial Medical Office (Taiyi Shu). This large organization, with 341 personnel, provided medical services for court officials and trained specialists in four departments: general medicine, acupuncture, therapeutic exercise, and incantation. The department of general medicine was the largest and further divided into five subspecialties: internal medicine; treatment of sores and swellings; pediatrics; treatment of ears, eyes, the mouth, and teeth; and cupping. Students in each of these subfields took two to seven years to finish their study. Upon passing an exam, they could start to practice.5

The second institution was the Palace Drug Service (Shangyao Ju), which offered medical services to the imperial house. The origins of the institution can be traced back to the end of the fifth century, during the Northern Wei dynasty (386–534), when its major function was the “tasting” of medicines for the emperor to ensure their quality.6 The Tang court expanded the agency into a multiunit organization that contained eighty-four personnel, including head officers; scribes; specialists in medicine, therapeutic exercise, incantation, and cream-making; and drug preparers.7 The last group merits our attention, as
half of the personnel, forty-two in number, were assigned to this unit, performing tasks including “scraping, trimming, pounding, and sifting.” These artisans were supervised by the heads of the service, who directed the combination of drugs based on their characteristics, including their flavors, degrees of heat, and dispositions, following the guidelines in materia medica texts. These carefully prepared drugs were then presented as treatment for the emperor.8

A third institution created during the Tang period was the Pharmacy in the Secretariat of the Heir Apparent (Yaozang Ju), which provided medications for the crown prince. The structure of the organization was similar to that of the Palace Drug Service but on a smaller scale, consistent with the hierarchical setup of imperial power.9

The administration of drugs for the royal family was a serious matter, with safety being the primary concern. The preparation of medicines was monitored not only by the heads of the Palace Drug Service but also by several officials outside the institution so as to guarantee quality. Once a medicine was ready, all the high-ranking officers in the service would try it first before wrapping it and stamping it with a seal. Together with the seal was a description of the formula, followed by the year, month, and date of the preparation as well as the signatures of all who had overseen its manufacture. On the day it was presented, the medicine was again tasted by the head of the service; his superior, the director of the palace; and then the crown prince before it entered the mouth of the emperor. It is hard to imagine a more stringent system to prevent drug poisoning.10

Possibly, some of the medicines presented to the emperor were potent, given the extreme care taken with their preparation and administration. Although this is not explicit in *The Six Ministries of the Tang Dynasty*, there is evidence to be found in a newly discovered legal document that has preserved some eighth-century Tang ordinances on imperial medicine.11 In particular, a section titled “Ordinances on Curing Illness” (Yiji ling) contains thirty-five regulations on medical education and practice in both central and local governments.12 One ordinance specifies the presentation of drugs:

To those in various departments inside the government and those in the ward for the sick, one should present drugs in decoction. If there are also potent drugs, one should present them to the Gates Office as well. One should not present raw drugs.13
The passage stipulates the duties of personnel in the Imperial Medical Office who offered medical services to governmental officers. They also took care of the patients in the “ward for the sick” (huanfang), a special ward for ailing palace maids. In general, drugs in decoction were prepared, which probably referred to mild substances that were intended to act quickly on the body. But potent drugs were also presented—likely in the form of pills, so they could release their power slowly—which had to be carefully inspected, and possibly tasted, by the Gates Office to guarantee safety. This system of surveillance was simpler than that established for the imperial house, but it was necessary nonetheless, especially when powerful substances were involved. Moreover, raw drugs were forbidden, probably because of their unattenuated strength. The warning also explains the designation of a large number of artisans skilled in drug processing in the Palace Drug Service.

What would happen if one erred in preparing medicines? The punishment was severe. According to The Tang Code (Tanglü, 653), the earliest Chinese legal code that is extant in its entirety, negligence in making imperial medicine was a crime of “great disrespect,” one of the ten most serious offences at court. Specifically, if a physician failed to follow the formula in preparing a medicine, made mistakes in dosage, or labeled a medicine incorrectly by confusing its warming, cooling, rapid, or slow-acting characteristics, he would be hanged. The punishment also extended to the officers who supervised the preparation; if accessories to a mistake, they would be banished to distant lands. Moreover, if a person failed to correctly prepare each ingredient in a formula by boiling, cutting, rinsing, or soaking, he would be condemned to one year of forced labor. Similar laws also applied to physicians working outside the imperial house, though the punishment was less severe. If a physician inadvertently killed a patient by preparing or labeling a medicine amiss, he would receive a sentence of two and a half years of forced labor. In short, the Tang government established strict laws to regulate medical practice at court and beyond.

Besides creating guidelines for the prevention of medical accidents, the Tang legal system also addressed cases where poisons were used for deliberate killing. Given the ubiquity of potent medicines in Tang medical practice, it would not be surprising to see such crimes occur frequently. In fact, one scholar has identified more than sixty poisonings during the Tang period, suggesting the prevalence of such occurrences at the time. Correspondingly, The Tang Code includes an article titled “The Use of Poisons to Poison People”: 
Those who use poisons to poison people and those who sell these poisons will be hanged. [Note: These substances can kill people. Although they are indeed poisons, they can also cure illness. If the buyer intends to poison a person but the seller does not know this intention, the seller is not punished.] If the transaction is completed but the poison is not used, the buyer and the seller will be banished to places two thousand li away.19

Revealingly, the law recognized the intention of the sellers: only when they colluded with the buyers would they be punished. This critical specification implies that these sellers could also provide poisons for a legitimate purpose, namely, to cure illness. The ambivalent relationship between medicines and poisons, as we have seen in materia medica writings, was also manifested in the Tang legal code. What defined a poison here was not the substance per se but rather its intended use.

In addition, the commentary on the article specifies four substances commonly deployed for killing: zhen-bird poison (zhendu), gelsemium (yege), and two types of aconite (wutou and fuzi).20 All are defined as possessing great du and are assigned medical uses in the materia medica literature. But their potential to harm did not escape the state’s attention. An ordinance that might have been part of the eighth-century legal document discussed above demands that private families not be allowed to own the first two items. The restriction reveals an effort on the part of the state to control access to dangerous substances and prevent them from falling into the wrong hands.21

Imperial Collection of Medicines

The creation of new institutions and legal codes to regulate medical services in the early Tang period relied on a system of drug supply that collected the best ingredients for the court. This goal was achieved by two mechanisms. The first was the cultivation of herbs in the capitals. According to The Six Ministries of the Tang Dynasty, the Imperial Medical Office designated land called “the medicinal garden” (yaoyuan) to grow medicinal plants, and assigned two masters and eight students to manage the land.22 “Ordinances on Curing Illness” further elaborates that fertile land of three qing (about forty-two acres) was chosen for this purpose at each of the two capitals.23 The masters taught students who were recruited between the ages of sixteen and twenty. They studied materia medica, which guided them in identifying and cultivating
various herbs. If wild forms of these medicinal herbs were available nearby, the office sent people to harvest them. If not, the office ordered those prefectures where the herbs grew naturally to submit the seeds for cultivation. Once successfully transplanted and further assessed, they entered the drug repository for regular use. The students, having completed their study, rose to fill the positions of their masters at the garden.24

By cultivating herbs that grew well in the capital regions of northern China, the medicinal gardens provided an assortment of ingredients for the Imperial Medical Office, which in turn processed and deployed them for medical services at court. This strategy of transplantation obviously saved the cost and trouble of transporting medicinal substances over long distances in the vast territory of the empire. As fresh ingredients were preferred in some cases, the presence of a nearby garden was convenient.

But this strategy of growing herbs locally was, after all, limited. Not all plants could adapt to the soil and climate of the capitals. Even if they could, they were found to not necessarily possess the same level of medicinal potency as those growing in their native lands. This is why Chinese materia medica texts specify the location where a drug of the best quality ought to be harvested. Furthermore, the Chinese pharmacopoeia contained not just plants but also minerals and animal-derived materials. These latter two groups were more difficult or even impossible to procure in new environments, and hence had to be collected from their original sites.

This need was met by the second mechanism of drug collection during the Tang period: the tribute system, which was a state network for the procurement of natural or manufactured products from local regions and foreign lands. The idea of such a system can be traced back to antiquity; The Book of Documents (Shangshu) envisioned a sage-king convening goods from all corners of his dominion as a “tribute” and symbol of effective governance.25 The actual practice probably started during the Han dynasty, and had become more elaborate by the time of the Tang. Among the wide-ranging kinds of tribute items, medicines occupied a prominent place. In particular, the Tang court devised two strategies for obtaining local drugs. The first aimed to collect drugs for the Imperial Medical Office, which took care of the health of governmental officials. For this purpose, the court appointed, for each prefecture, a number of “masters of harvesting drugs” (caiyao shi) who were responsible for collecting medicinal substances based on the sites specified in the materia medica literature. To facilitate transportation, a donkey was assigned to carry the
materials to the capital if their weight exceeded one hundred jin (about 68 kg). When necessary, the court also purchased drugs from local markets, though the portion procured in this way was relatively small.  

The second strategy had a narrower focus, namely, to collect drugs for the imperial house. It was part of a system called “local tribute” (tugong) that not only fulfilled the material needs of the royal family but also symbolized regional submission to central authority. Unlike collection for the Imperial Medical Office, the Tang court designated certain households in a given region, often with hereditary status, to collect or produce local products for tribute. It then appointed a delegate in each prefecture, “the territorial representative” (chaoji shi), to purchase these products and present them to the court at the end of each year, where they were prominently and ostentatiously displayed. The amount of these tributes, according to a ninth-century stipulation, should be modest, and their price in a prefecture should not exceed that of fifty rolls of silk, a measure to prevent burdening the community. Based on one modern scholar’s calculation, compared to taxes, local tributes constituted only a minuscule portion of state revenue, indicating that their role in the Tang economy was insignificant. That being said, tribute items were not only a symbolic manifestation of imperial power. Many, especially medicines, were practically useful, given their limited supply in the capitals.  

A number of Tang sources enumerate these tribute items and their points of origin. Among these, the most elaborate account is found in Comprehensive Institutions (Tongdian, 801), a text that surveys political institutions from antiquity to the early Tang period. The book contains an extensive list of tribute items from the mid-eighth century, each with its origin and amount, offering us a concrete picture of the imperial collection of local products. Altogether, 264 items are listed, which include textiles (61); mats and utensils (18); miscellaneous articles such as candles, mirrors, fans, porcelains, silver, and pets (34); foods (28); and above all, medicines (123). The fact that drugs made up nearly half of all tributes suggests their paramount importance for the imperial house. Among the 287 prefectures on the list, 118 from all over the empire presented drugs (map 4.1). Specifically, these prefectures can be divided into eight zones: the capital region (zone A), the Shandong Peninsula in the east (zone B), the Sichuan region in the southwest (zone C), the central region (zone D), the southeastern region (zone E), and three regions at the periphery of the empire: zone F in the far south, zone G in the far north, and zone H in the far west). Among these zones, the southwestern
region (zone C) particularly merits our attention, as it contains a concentrated cluster of prefectures, especially those on the eastern edge of the Tibetan Plateau, that submitted a rich variety of medicines to the court. This is probably due to the presence of high mountain ranges and the moist climate characteristic of the region, making it an ideal source of pharmaceutical materials. 

Several drugs figure prominently on the tribute list. The one that appears most frequently is musk (shexiang)—457 pieces of it were collected from twenty-six prefectures, mainly in the southwest (zone C). The glandular secretion from musk deer, with its strong fragrance, was valued not just as a medicine to treat malaria, counter gu poison, and eliminate worms but also as an apotropaic substance that could dispel demons and prevent nightmares. The latter usage likely explains the high demand for the aromatic on the part of the imperial house. Other popular drugs on the list are dendrobium (shihu) from eleven prefectures in the central and southern regions (zones D and F), angelica (danggui) from six prefectures in the southwest (zone C), and ginseng (renshen) from five prefectures in the north and northeast (zones A and G). Intriguingly, all these herbs were believed to possess the power of nourishing the body; their regular ingestion promised to strengthen the viscera, pacify the mind, enhance fertility for women, and prolong life. The benefits of these tonic substances probably made them favorites in the imperial collection.

Besides restoratives, the Tang rulers also gathered potent drugs. Altogether, sixteen such drugs (nine plants, two minerals, and five animal products) appeared on the tribute list, which were presented by twenty prefectures throughout the empire (map 4.1 and table 4.1). Their distribution, however, was uneven. Most of the potent plants came from the central region (zone D), especially the mountainous areas where such herbs grew abundantly. Two potent minerals were collected from distant ends of the empire: mercury from the far south (zone F), where its primary ore, cinnabar (mercury sulfide), was plentiful; and sal ammoniac (naosha) from the far west along the Silk Road (zone H). The latter was a foreign drug newly introduced into the Tang pharmacy as a result of the imperial expansion into central Asia. Its inclusion in the tribute list demonstrates not only the imperial interest in trying novel medicines but also the reach of Tang power to the distant edges of its vast territory. Finally, the potent animal products on the list include blister beetles from the capital region (zone A), bovine bezoar from the east (zone B), and most conspicuously, forty pieces of boa gallbladder (ranshe dan) collected
MAP 4.1. Prefectures offering tribute drugs in the Tang period (mid-eighth century). The map was generated using the China Historical GIS and ArcGIS, based on information from *Comprehensive Institutions* (Tongdian, 801).
TABLE 4.1. Potent drugs among Tang local tributes

<table>
<thead>
<tr>
<th>NO.</th>
<th>SITE</th>
<th>ZONE</th>
<th>ITEMS</th>
<th>TYPE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Binzhou</td>
<td>A</td>
<td>Snake gallbladder (<em>shedan</em>)</td>
<td>Animal</td>
<td>10 jin*</td>
</tr>
<tr>
<td>2</td>
<td>Ningzhou</td>
<td>A</td>
<td>Two types of blister beetles (<em>yuanjing</em>, <em>tingzhang</em>)</td>
<td>Animal</td>
<td>Unspecified</td>
</tr>
<tr>
<td>3</td>
<td>Shengzhou</td>
<td>G</td>
<td>Red peony (<em>chi shaoyao</em>)</td>
<td>Plant</td>
<td>10 jin</td>
</tr>
<tr>
<td>4</td>
<td>Mizhou</td>
<td>B</td>
<td>Bovine bezoar (<em>niuhuang</em>)</td>
<td>Animal</td>
<td>1 jin</td>
</tr>
<tr>
<td>5</td>
<td>Dengzhou</td>
<td>B</td>
<td>Bovine bezoar</td>
<td>Animal</td>
<td>128 pieces</td>
</tr>
<tr>
<td>6</td>
<td>Laizhou</td>
<td>B</td>
<td>Bovine bezoar</td>
<td>Animal</td>
<td>122 liang</td>
</tr>
<tr>
<td>7</td>
<td>Anxi duhufu</td>
<td>H</td>
<td>Sal ammoniac (<em>naosha</em>)</td>
<td>Mineral</td>
<td>50 jin</td>
</tr>
<tr>
<td>8</td>
<td>Huangzhou</td>
<td>D</td>
<td>Horsefly (<em>mengchong</em>)</td>
<td>Animal</td>
<td>2 jin</td>
</tr>
<tr>
<td>9</td>
<td>Jinzhou</td>
<td>D</td>
<td>Dried lacquer (<em>ganqi</em>)</td>
<td>Plant</td>
<td>6 jin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Omphalia (<em>leiwan</em>)</td>
<td></td>
<td>5 liang</td>
</tr>
<tr>
<td>10</td>
<td>Fangzhou</td>
<td>D</td>
<td>Omphalia</td>
<td>Plant</td>
<td>Unspecified</td>
</tr>
<tr>
<td>11</td>
<td>Lizhou</td>
<td>D</td>
<td>Dichroa root (<em>hengshan</em>)</td>
<td>Plant</td>
<td>8 jin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dichroa leaf (<em>shuqi</em>)</td>
<td></td>
<td>1 jin</td>
</tr>
<tr>
<td>12</td>
<td>Xiazhou</td>
<td>D</td>
<td>Dysosma (<em>gujiu</em>)</td>
<td>Plant</td>
<td>2 jin</td>
</tr>
<tr>
<td>13</td>
<td>Mingzhou</td>
<td>E</td>
<td>Aconite (<em>fuzi</em>)</td>
<td>Plant</td>
<td>100 pieces</td>
</tr>
<tr>
<td>14</td>
<td>Chaozhou</td>
<td>F</td>
<td>Boa gallbladder (<em>ranshe dan</em>)</td>
<td>Animal</td>
<td>10 pieces</td>
</tr>
<tr>
<td>15</td>
<td>Lizhou</td>
<td>C</td>
<td>Pepper of Sichuan (<em>shujiao</em>)</td>
<td>Plant</td>
<td>1 shi</td>
</tr>
<tr>
<td>16</td>
<td>Guangzhou</td>
<td>F</td>
<td>Boa gallbladder</td>
<td>Animal</td>
<td>5 pieces</td>
</tr>
<tr>
<td>17</td>
<td>Annan duhufu</td>
<td>F</td>
<td>Boa gallbladder</td>
<td>Animal</td>
<td>20 pieces</td>
</tr>
<tr>
<td>18</td>
<td>Rongzhou</td>
<td>F</td>
<td>Mercury (<em>shuiyin</em>)</td>
<td>Mineral</td>
<td>20 jin</td>
</tr>
<tr>
<td>19</td>
<td>Gaozhou</td>
<td>F</td>
<td>Boa gallbladder</td>
<td>Animal</td>
<td>2 pieces</td>
</tr>
<tr>
<td>20</td>
<td>Xunzhou</td>
<td>F</td>
<td>Boa gallbladder</td>
<td>Animal</td>
<td>3 pieces</td>
</tr>
</tbody>
</table>

* During the Tang period, one jin was about 661 grams; one liang, which was one sixteenth of one jin, was about 41 grams; one shi, which was equivalent to 120 jin, was about 80 kilograms. See Qiu, Zhongguo lidai duliangheng kao, 446.

from five prefectures in the far south (zone F). Considered slightly potent, the snake medicine could be either ingested to alleviate pain or applied topically to treat skin disorders. It is unclear why the Tang emperors particularly favored this product since its medical uses were not unique. The drug, though, was extremely hard to acquire, and the Tang materia medica literature advised on how to distinguish the genuine type from the impostors.37 The rarity of the substance, together with its inconvenient source at the remote south of the empire, may have enhanced its exotic appeal.38
The Making of Newly Revised Materia Medica

The extensive collection of drugs procured from throughout the empire not only manifested the symbolic authority of the Tang rulers over local domains but also supplied the court with necessary materials for practical needs. What texts did the state rely on to locate and deploy these medicines? As discussed earlier, both the personnel at the medicinal gardens of the capitals and the harvesters in various prefectures relied on materia medica texts to identify herbs and procure drugs. Moreover, according to “Ordinances on Curing Illness,” materia medica were among the first texts that the students in the Imperial Medical Office were required to master, allowing them to recognize the morphology of ingredients and understand their medicinal properties.39 One text in particular, Newly Revised Materia Medica (Xinxiu bencao, 659), played a pivotal role in standardizing drug knowledge and guiding medical practice.

As the first state-commissioned materia medica in China, Newly Revised Materia Medica was produced under the sponsorship of Emperor Gaozong (reigned 649–683).40 According to a partial copy of the text preserved in Japan and dating to 731, twenty-two officials were involved in the project. Among them, twelve were medical specialists from the Imperial Medical Office, the Palace Drug Service, and the Pharmacy in the Secretariat of the Heir Apparent. Another seven were nonmedical officers; they either possessed medical knowledge conducive to producing the work or coordinated the effort of medical specialists between different offices. The director of the project, Su Jing, belonged to this group. Although he was not a medical officer, he had advanced knowledge of medicine, with particular skill in treating an illness known as foot qi (jiaoqi), which brought him great fame.41 Su’s leadership in the project reveals the vital interaction between medical specialists and court officials in the production of standardized drug knowledge. Finally, the last three persons on the list were high officials at court, who were probably only nominally involved in the project to display the support of the state. Taken together, this composite list of authors, consisting of specialists, nonspecialists, and high-ranking statesmen, reveals the agenda of the project that tied the making of pharmacological knowledge to the establishment of political authority.42

Newly Revised Materia Medica contains fifty-four scrolls, which include twenty-one scrolls of the main text, twenty-six scrolls of drug illustrations,
and seven scrolls mapping source locations of drugs. The latter two parts, which were new additions to the standard materia medica genre, emphasized the importance of the precise identification of drugs. These two sections, however, have been lost. The organization of the main text followed Tao Hongjing’s classification scheme, grouping drugs based on their natural category (minerals, plants, animals, foods), and further divided these groups into finer gradations: the plant group was split into “herbs” and “trees,” the animal group into “beasts and birds” and “reptiles and fish,” and the food group into “fruits,” “vegetables,” and “grains.”

Altogether, Newly Revised Materia Medica lists 850 drugs. Among them, we find 115 new drugs, 193 drugs no longer in use and mentioned only by name, 138 drugs for which the Tang authors endorsed Tao’s annotations, and 404 drugs for which they rectified his views. For each drug entry, the compilers copied Tao’s writing faithfully, even in the cases where they disagreed with him, and added their own comments at the end marked by “carefully examined” (jin’an). Overall, the Tang authors did not challenge the commentary conventions of the materia medica genre initiated by Tao, nor did they alter the basic properties of each drug, which include mention of its potency (du). Their comments instead focused on the clarification of the naming, morphology, or source location of each drug for which they considered Tao’s knowledge of these to be obsolete or erroneous. The collection of local drugs constituted a vital part of the imperial tribute system, which likely explains the emphasis on accurate drug identification in the Tang commentary.

Before going over each of the entries, Newly Revised Materia Medica offers a short preface written by Kong Zhiyue, the director of the Ministry of Rites. The preface starts with an account of the early history of medicine, listing a group of eminent physicians in antiquity who had mastered the art of healing. It then turns to Tao, recognizing his contribution to the writing of materia medica but highlighting the many mistakes he made, necessitating the compilation of the new work. The section that then follows, a sudden change of topic, shifts to extol the grandeur of the Tang empire. The section is omitted in the Song editions but preserved in a manuscript fragment from Dunhuang dating to the late ninth century that has been made open to the public only recently. Written in ornate, rhapsodic style, it proclaims:

Our great Tang rules under heaven. We have inherited the propitious fortune of the Qin and Han. During the devastating time of the Zhou and Sui, we
saved the pivot of Heaven from falling and stabilized the center of Earth to prevent it from toppling. We have recalibrated all kinds of things to continue nourishing human beings. Our magnificent achievements reverberate afar, and orderly rule spreads throughout the world.

Swiftly zooming out from the specific case of Tao Hongjing, the passage depicts a grandiose image of the Tang majestically recovering and sustaining the proper order of the cosmos. After the chaos of the preceding dynasties, the Tang had managed to “recalibrate” (chonggou) everything in the world to benefit its people. The standardization of things—medicines included—became a critical approach for the empire to achieve effective governance.

The remainder of the section carries on in the same grand tone, celebrating the unbounded virtue of the Tang rulers and the splendid gifts presented to the court from all parts of the world, a clear reference to the tribute system. After this overtly political passage that glorifies the all-encompassing Tang power, the preface zooms in to the compilation of *Newly Revised Materia Medica*, specifying its authors, principles, and content, and the pivotal role of the state in propelling the project. All in all, weaving medical narrative with political proclamations, the preface reflects a synergistic effort between medical specialists and court officials that sought to standardize pharmaceutical knowledge so as to facilitate the ruling of the empire.

How did *Newly Revised Materia Medica* standardize knowledge of drugs? Significantly, the authors of the Tang work devoted most of their comments to clarifying the morphology and source locations of drugs rather than elucidating their medicinal uses. In their eyes, Tao’s text was often erroneous because he had been restricted to the southeast and hence had no firsthand knowledge of medicines from other regions. Moreover, Tao’s close association with Daoist practices also tainted his understanding of many drugs. A telling example is gelsemium (gouwen), an herb possessing great *du* and deployed mainly for making ointments to treat swellings. It was also a poison frequently used in suicide. The identification of the plant was a thorny issue. In his commentary, Tao depicted the medicine as a type of grass with purple stems and yellow flowers; newly grown, it strikingly resembled another herb called “yellow essence” (huangjing, polygonatum). The juxtaposition of the two herbs originally appeared in a late third-century Daoist treatise that discussed the techniques of life cultivation. The text contrasted the yang power of *huangjing*, which nourished life, with the yin power of *gouwen*, which triggered death.
The morphological similarity between the two plants, as described by Tao, fit well with the yin-yang dichotomy articulated in the Daoist writing.51

The Tang authors, however, found Tao’s view to be mistaken. They instead contended that the two plants were utterly unrelated: *huangjing* grew straight, with two leaves or four to five leaves facing each other, whereas *gouwen* spread on the ground, with leaves resembling those of a willow tree. They also grew in different regions. While the former grew everywhere, the latter was only found in the far south, anywhere south of Guizhou (in present-day Guangxi), a region that Tao probably never visited. The Tang authors asserted that *gouwen* grew “in all the villages and alleys” in that region, with two different names used by local people, suggesting that they obtained direct knowledge of the plant by surveying the area. This is also indicated by another piece of evidence: Tao held that there was a different type of *gouwen* growing in the region of Qin in the northwest, which was far away from where he lived. The Tang authors, however, considered the claim to be nothing but a rumor, as they couldn’t find the herb in that region in spite of an exhaustive search.

Rectifying Tao’s remarks that relied on the accounts of others, the Tang revision offered updated knowledge of the morphology and source locations of drugs based on firsthand observation.52

Besides amending the identification of drugs, the Tang authors also strove to standardize their names. Beginning in the period of *The Divine Farmer’s Classic*, many medicinal substances had alternative names, including local variations. Over time, the names proliferated, which caused confusion: sometimes two names were thought to refer to two different drugs, but actually these were just variant names for the same plant; other times, the opposite happened. *Newly Revised Materia Medica* tried to clear up these confusions. On the one hand, it verified regional names of drugs by on-site investigation, as seen in the case of *gouwen*. On the other hand, it relied on classical texts to identify the correct pronunciation and meaning of many drug names. Tellingly, the most frequently cited title in the Tang materia medica was not a medical text but an ancient dictionary, *Approaching Correctness* (Erya, ca. third century BCE), suggesting the value of classical knowledge in the naming of medicines.

This scholarly bent is illustrated by the case of aconite. *Newly Revised Materia Medica* presented five names for the potent herb (*wutou*, *wuhui*, *tianxiong*, *fuzi*, and *cezi*), most of which depicted the shape of its tubers. Tao pointed out that *wutou*, which means the head of a black bird, referred to an intact tuber,
whereas *wuhui*, the beak of a black bird, specified a tuber that cracks in the middle. The Tang authors, however, did not find such a distinction meaningful. If a cracked tuber of *wutou* justified a different name, they wondered, what would one call a cracked tuber of *tianxiong*, or *fuzi*? Redundant names were bewildering.\(^{53}\)

Moreover, these authors also challenged Tao’s understanding of *cezi*, which literally means “side offspring.” They defined *cezi* as the small outgrowth of *wutou*, which is the main tuber of aconite, not the large node of the side tuber *fuzi*, as Tao identified it. In certain regions, they observed, the size of *fuzi*’s nodes was as small as that of a grain of millet, making its use impractical. Moreover, they noticed that the slim *fuzi* used lately in the capital was quite efficacious, but no one took off its nodes for separate use. Empirical knowledge, therefore, informed the proper naming of medicines.\(^{54}\)

Another name that Tao mentioned is *sanjian*, which referred to three types of aconite (*wutou*, *fuzi*, and *tianxiong*) from the region of Jianping in the southeast. The Tang authors found the name misleading. The best aconite, they declared, grew in Mianzhou and Longzhou in the southwest (in Mianyang in northern Sichuan, see Longzhou on map 4.1); those from the rest of the country possessed only weak powers, while aconite in the southeast was utterly useless. Then where did Tao get the name of *sanjian*? Citing the aforementioned dictionary *Approaching Correctness*, the Tang compilers pointed out that the ancient name for aconite was *jin*, pronounced in a similar way to the place name *jian*. The phonetic resemblance, they reasoned, must have caused Tao’s confusion, causing him to mistake the source location of the herb. Classical wisdom was conducive to clarifying dubious names.\(^{55}\)

Finally, to facilitate standardization, the Tang authors also rectified local drug knowledge, especially that deriving from common people. Given the size of the empire, ordinary people’s understanding of drugs differed vastly across regions, often leading to contradictory claims, which compelled the court to establish an authoritative guide to standardize pharmaceutical knowledge and eliminate confusion. The preface of *Newly Revised Materia Medica* pointed out the issue explicitly: there were 404 drugs for which Tao had made wrong annotations. Sometimes he was right about a drug, yet laypeople used it incorrectly; sometimes he was wrong, and laypeople followed his mistaken instructions for how to use the drug.\(^{56}\) Evidently, the Tang authors were critical of laypeople in general, calling attention to the unreliability of their knowledge of drugs. This ignorance, they indicated, could lead to serious consequences. For
instance, in the entry for *duheng* (southern asarum), they observed that laypeople at the time often replaced the herb with *jiji* (chloranthus), a *du*-possessing plant that should only be applied externally to treat ulcers and scabies. The substitution was a dangerous mistake, since ingesting the powerful *jiji* would make a person vomit. Sometimes, the limited availability of drugs compelled lay users to employ inferior substitutes. This was the case for *guijiu* (dysosma), a *du*-possessing herb grown in the deep mountains that was “extremely hard to acquire.” Laypeople then used the herb *yegan* (belamcanda), or an unspecified herb from the southeast, both of which the Tang authors deemed inauthentic. The warning reveals a tension between the imperial effort to standardize pharmaceutical knowledge and lay practices that often depended on restricted resources.

**Local Adaptations of Drug Knowledge**

The making of *Newly Revised Materia Medica* revealed the imperial ambition of standardizing medical knowledge to guide the collection and deployment of drugs. Once the text was created at the imperial center, how did it spread to the rest of the country? What strategies did the Tang court employ to disseminate medical knowledge? Although there is evidence suggesting the use of printing by the court in the early eighth century, the technology was still nascent, with a particular focus on replicating religious texts. Manuscript culture, by contrast, dominated the reproduction of books, including those on healing. In addition, the Tang court put key medical instructions on public display to enhance their accessibility. For example, in 746, Emperor Xuanzong (reigned 713–756) issued an edict requesting that local officials inscribe essential passages from a medical work called *Formulas for Widespread Aid* (Guangji fang) on large slabs and then place them on the main road of each village. Similarly, in 796, Emperor Dezong (reigned 779–805) sponsored the compilation of *Formulas for Widespread Benefit* (Guangli fang) and requested that the work be inscribed and exhibited on the major roads of the empire. In both cases, what was engraved has been lost, but based on the titles of these works, they were probably prescriptions for easy, everyday use. Before the age of print, public display was a vital method of disseminating medical knowledge to the populace.

In the case of *Newly Revised Materia Medica*, the text quickly spread to various regions of the empire, propelled by the government. Before the compilation
of the text, the Tang court in 629 had established offices for teaching medicine in the prefectures. In 723, it further appointed an “erudite of medicine” (yi boshi) in each prefecture who took charge of medical education, using the materia medica together with an unspecified formula collection as key guidebooks. Yet before the text was fully institutionalized, it had already been diffused to local districts. In the town of Dunhuang in the far west, a manuscript copy of the text has been discovered that dates to as early as 669, that is, merely ten years after the court completed the project. The text also traveled eastward—it reached Japan in the early eighth century, as attested to by an extant copy dating to 731.

The rapid transmission of Newly Revised Materia Medica raises the question of how it was used in local communities. The central government had all the resources for procuring the best drugs to serve the top echelons of society, but how did common people harness the text for their own needs? The study of the Dunhuang manuscripts offers clues. Discovered in one of the Buddhist grottoes of Mogao near Dunhuang (in present-day Gansu, see map 4.1) in 1900, the treasure trove contained over forty thousand manuscripts dating from 406 to 1002. The manuscripts were likely the holdings of a local monastic library since most of them are Buddhist scriptures, but there was also a large number of secular documents in the collection, including classics, poems, and governmental edicts.

Among more than one hundred medical manuscripts in the Dunhuang collection are formula books, medical classics, acupuncture guides, and materia medica texts, including five copies of Newly Revised Materia Medica, all incomplete. One, dating to the late ninth century, preserves a segment of the preface. One, dating to 669 or later, contains the herbal section of thirty drugs in the bottom group. Another two copies are highly incomplete: one contains nine drugs spread across the sections for fruits, vegetables, and grains, and the other has two drugs from the section for fruits. The three manuscripts that preserve drug entries follow the convention of commentary writing, with the original Han text and both Tao Hongjing’s and the Tang authors’ commentaries clearly differentiated. The fifth copy (P. 3822), however, is of a different type.

P. 3822 stands out as a unique document (figure 4.1). Above all, its form is intriguing. In contrast to other copies written on standard scrolls, which are often long and bulky, it was written on both sides of a small leaflet made of paper (27 cm long and 8.3 cm wide). It is a self-contained text, because the last
line was squeezed in on the back to finish a sentence. Revealingly, a small hole is found at the upper center of the leaflet, which would have been the site where multiple such leaflets were bound together. This is characteristic of the so-called pothi manuscripts, originally developed in ancient India, where dried palm leaves were used for writing. This form of manuscript had spread to Tibet with Buddhist monks by the Tang period, but with paper replacing...
leaves as the dominant medium. The Dunhuang collection contains about forty manuscripts of this type, the majority of which are Buddhist scriptures. As Dunhuang was occupied by the Tibetan empire from 786 to 848, it is likely that the pothi manuscripts were produced during this period or later. As a primordial form of codex books, these manuscripts were convenient to carry and easy to use by flipping through the fastened leaflets. For an itemized text such as Newly Revised Materia Medica, the form would have worked well for a user who wanted to quickly locate a drug entry.72

What is written on the leaflet? P. 3822 includes eight drugs from the vegetable section of Newly Revised Materia Medica but alters their order from the court-issued version. On the front side is “scallion” (cong), a vegetable in the middle group. The back begins with one vegetable from the bottom group, followed by three vegetables from the middle group, and ends with three vegetables from the top group. Moreover, the writing defies the conventional style of materia medica, namely, using red ink for the original Divine Farmer’s Classic, black ink for the rest, and a smaller font for the commentaries. In P. 3822, every word is written in black, and all characters are the same size. Most significantly, the manuscript does not fully copy each drug entry. On the front side, for example, the content of “scallion” is complete, yet on the back, most of the entries are shortened. Sometimes the omissions are striking—even words from The Divine Farmer’s Classic are missing, a phenomenon we do not see in any other extant manuscripts of the text.

Obviously, the copying was selective, possibly for practical reasons. The copyist might have chosen the most relevant vegetables from the Tang materia medica and arranged them according to local demands. The elimination of the color and font distinctions suggests a breaking of the textual hierarchy that was strictly followed by the court scribes. Among the eight vegetables, scallion was the most important for the copyist; it occupies the full front side of the leaflet, including the complete original text. This could be due to its diverse medical uses: its seeds brighten the eyes and replenish the body; its stems treat “cold damage,” excessive sweating, and a swollen face, as well as annihilate a hundred kinds of drug poisoning; its roots alleviate headache; its juice cures blood in the urine. The plant appears to be a marvelous panacea. Moreover, the Tang compilers’ commentary, which was faithfully copied, is particularly useful, because it further identifies three types of scallion for different uses: the mountain scallion, for treating illness; and the frozen scallion and the Han scallion, which are consumed as foods.
The availability of the plants may have been another factor in the selective copying. The text does not specify the location of scallion, suggesting its widespread growth. By contrast, the three plants written on the back of the leaflet only grew along the rivers and lakes of specific regions that were far away from Dunhuang: bitter calabash (kuhu) from the land of Jin (in present-day Shanxi), water betony (shuisu) from Jiuzhen (in present-day northern Vietnam), and the fruit of knotweed (liaoshi) from Leize (in present-day Shandong). It is perhaps not a coincidence that these three entries suffered severe editing, as the information was not as relevant as that for local plants. In comparison, the complete copying of the text for purple betony (zisu) immediately after water betony makes sense. The plant probably grew locally, suggested by its unique name—possibly a regional name—chosen by the copyist. To help one recognize the plant, the copyist also included the key information for its identification: the back of its leaves is purple, and it gives off a strong fragrance. It may have been a suitable local substitute for water betony: the plant has the same properties (warming and pungent), with a similar medical usage of precipitating qi in the body. Textual modification in P. 3822, therefore, evinces a deliberate effort to adapt imperial knowledge to local needs.

Who might have used the leaflet? Given that the Dunhuang manuscripts were part of the library collection of a Buddhist monastery and that the pothi texts were predominantly produced and employed by Buddhist monks, it is likely that local monks utilized the leaflet for their medical practice. As mentioned earlier, the Tang court’s management of medicine spread to all corners of the empire in the seventh and early eighth centuries by appointing medical personnel and circulating standardized texts in various prefectures. Dunhuang was no exception: located in Shazhou in the far west, it established an office of medical education with its own “erudite of medicine,” appointed by the court. Yet after the Tibetan empire seized the town in the late eighth century, Tang influence declined. As a result, the center of medical service shifted from governmental offices to local monasteries. In fact, scholarship has identified several prominent monks in Dunhuang who practiced medicine and obtained great reputations in the community. The leaflet, with its modified knowledge of drugs for local needs, could have been an important guide for their practice.

Furthermore, the vegetables listed on the leaflet could have been cultivated in local monasteries and consumed for dietary instead of medical purposes. This hypothesis, developed by the historian Iwamoto Atsushi, is reasonable.
given the intimate relation between food and medicine in the Tang pharmacy. However, if local monasteries did intend to grow these vegetables as foods, they probably would have consulted an agricultural manual rather than a pharmacological text. In addition, the most prominent entry on the leaflet is scallion, which was one of the five pungent vegetables (wuxin) forbidden by Buddhist doctrines, because its strong flavor was believed to disturb the body and poison the mind. This prohibition made the consumption of scallion as a regular food unlikely. On the other hand, the plant could still be used as a medicine, taken periodically to treat specific illnesses. Alcohol was consumed in a similar manner in monasteries. Ultimately, it was not the substance itself but the particular purpose it served that mattered.

Finally, it merits our notice that not every manuscript stored in Dunhuang was copied there. Some Buddhist scriptures, especially the esteemed ones, were copied at the capital, where the court had established copying offices and employed professional scribes to reproduce texts that were often long and didactic. These court-sponsored manuscripts were typically written in standard script and subject to multiple rounds of proofreading. P. 3822, however, was probably not the product of such systematic copying. There is no evidence that any extant pothi manuscript was produced by the Tang government, considering its characteristic form of Indian-Tibetan origins. Its portable layout made it easy to use but not necessarily an object that manifested imperial majesty. What is more, the writing on the leaflet was casual and unstylish, with the frequent use of nonstandard words and more than twenty copying errors. Clearly, this was a text produced by an untrained hand, not at an official copying center. Although we cannot be entirely certain of its provenance, given that a significant number of manuscripts in Dunhuang were donated by pilgrims from other places, it is probably safe to say that the leaflet was linked to local medical practice, either in Dunhuang or elsewhere.

Conclusion

The seventh and early eighth centuries witnessed the active engagement of the state in standardizing pharmaceutical knowledge and regulating medical practice. Institutionally, the Tang court established several offices to train specialists and provide medical services for the imperial house and governmental officials. Legally, it created a series of ordinances to inspect the quality of drugs and guarantee the safe use of them in practice. Moreover, it cultivated
herbs in the medicinal gardens of the capitals and built an extensive tribute system to collect drugs throughout the empire, which not only manifested the pervasive spread of imperial power but also supplied necessary medicinal substances for the court. Finally, it commissioned the production of medical texts, epitomized by *Newly Revised Materia Medica*, which critically edited, corrected, and updated existing knowledge of drugs, standardizing it as a guide for medical practice both at court and in local regions.

Among these various strategies, poisons figured prominently. Instead of shunning dangerous substances entirely, the Tang court recognized their medicinal value and tried to collect the most useful substances throughout the empire. The imperial effort was aided by *Newly Revised Materia Medica*, whose authors paid keen attention to the appearance, names, and local uses of drugs, and generated new knowledge that combined classical wisdom with empirical observation. The state was fully aware of the danger of poisons, though, as revealed by the elaborate drug-tasting system to protect the emperors, and strict laws to punish those who either misused poisons in their medical practice or manipulated them for nefarious purposes. This is unsurprising given the plentiful incidents of poisoning, murder, and witchcraft at court. Poisons hence presented both opportunities and challenges for sustaining effective rule.

Most of the actions taken by the Tang government to regulate drugs were not entirely new. For instance, the Sui authority had already established the Imperial Medical Office and the Palace Drug Service, which the Tang court inherited in the seventh century and substantially remodeled during the favorable environment of political stability and imperial expansion.82 After the devastating An Lushan Rebellion in the mid-eighth century, though, the Tang central power waned—no state-sponsored medical projects appeared in the ninth and early tenth centuries. It was not until the Northern Song period (960–1127) that the state resumed enthusiastic engagement in medicine; the historian of medicine TJ Hinrichs has demonstrated how the Northern Song court achieved effective governance by systematically producing and disseminating medical texts, deploying them to suppress unorthodox local customs.83 Although such efforts seem to resemble those of the early Tang period, there is one key difference: in the earlier period, the state relied heavily on the copying of manuscripts, accompanied by the public display of concise guidelines, to spread medical knowledge, while in the later dynasty, printing played a central role. Utilizing this new technology that could quickly reproduce
authoritative texts, the state became more efficient in establishing standards and circulating them throughout the empire.

How was the government-produced medical knowledge received by local communities? Compared to the court, where the most skilled physicians and the finest medicines were available, ordinary people—especially those living in regions far away from the imperial center, such as Dunhuang—faced the challenge of limited medical resources. Consequently, they adopted various methods to overcome these obstacles, such as harnessing herbs available in their area and identifying drug substitutes. The rise of authoritative, standardized medical knowledge thus went hand in hand with its fluid transformations in distant regions. From the tenth century, the development of printing effectively promulgated standardized texts that suppressed local practices. During the Tang period, however, a different picture emerged: the flexible and adaptive character of manuscripts allowed local actors to resourcefully cope with established medical knowledge and modify it for their own needs. When manuscript culture flourished, the power of the textual regime was limited, leading to rich varieties of regional writings that informed diverse practices.84

The Dunhuang manuscripts reveal the importance of practice in guiding the production of local medical knowledge. Due to the fragmented nature of these manuscripts, we know little about who the authors were and what might have motivated them to create the texts. Fortunately, for more elaborate discussion of medical practice, we have the writings of Sun Simiao, the subject of the next chapter, an eminent Tang physician who wrote profusely on drug remedies, many of which were based on his own experience.