



Medieval European Medicine and Asian Spices

NAM Jong Kuk*

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I. Introduction

In 1348, the black plague hit Western Europe and took the lives of many people. It seemed as if no remedy or medicine was of use. To stop this disaster, Philippe VI of France ordered the Paris medical faculty to find the cause and treatment for the plague. The medical faculty of Paris University submitted a detailed report by mobilizing all available medical and scientific knowledge. They claimed that Jupiter, Saturn, and Mars coincided with each other at Aquarius (celestial longitude) in March 1345, and this produced “evil air” that directly caused the epidemic. Also, they suggested basic rules for living and various medicines to prevent epidemics (De la Haye, 1888: xvi-xvii).

First, they recommended that people should avoid bad and evil air

* Department of History, Ewha Womans University
Address: 52 Ewhayeodai-gil, Seodaemun-gu, Seoul, 120-750, KOREA
E-mail: namjk0513@ewha.ac.kr.

ascending from the South, and to eliminate that bad air with smoke by burning spices or aromatic plants. Also, they advised people not to eat or drink too much, boil all meat in a soup of cassia, cinnamon, wine, and vinegar, and to use spices such as cassia, cinnamon, ginger, and cloves when making sauces. They also advised regular bloodletting when needed (De la Haye, 1888: xxxii). Furthermore, they recommended that people should carry incense pouches called *pomme d'ambre*. In these incense pouches, Asian spices such as pepper, ginger, cinnamon, cloves, cardamom, galingale, or turmeric were generally kept. Sadly, poor people who couldn't afford these spices were advised to simply pray instead. In addition, various syrups, pills, and compound drugs were recommended. At that time, theriaca was known as a panacea, but its main ingredients were spices (De la Haye, 1888: xxxvii, 82, 146-155; McVaugh, 1982: 253).

Asian spices were also used in treatment for various diseases apart from treating the plague. In medieval monasteries in Europe, they prescribed a medicine made by mixing cinnamon and herbs to treat insomnia, a medicine made by mixing crushed snails and pepper to treat skull pains, wine with pepper to treat kidney pains, and cloves, cinnamon, aloe, and lavender to treat headaches. When an aged monk was ill, they generally prescribed spices in the early stages, and then used spices again as a restorative in the recovering stage. At the end of the 15th century, the hospital of Countess L'Isle made a routine of buying medicines made of pepper, cinnamon, cloves, nutmeg, grain of Paradise, and theriaca (Balard, 1995: 99).

As spices were often used as important medicines, there were cases where spice merchants sold medicines and pharmacists sold candies and food ingredients with spices. In reality, there was no clear distinction between spice merchants and pharmacists. In pharmacies and spice stores throughout the medieval Europe, Asian spices such as pepper, ginger, cinnamon, cassia, nutmeg and mace, cloves, cardamom and turmeric were basic medicines that they always kept in supply (Balard, 1987: 131; Riddle, 1965: 187).

The research that analyzed prescriptions in the medical literatures of Western Europe during the 1st century to 10th century proves that Asian spices were essential medicines. In reality, the most frequently used medicine during this period was pepper.¹⁾ In the medical texts stored in the St. Gall library in Switzerland, pepper was the most frequently used medicinal ingredient.²⁾ Pepper was a common Asian spice that comprised of more than half of the total imports of Asian spices.

Then, why were Asian spices so essential to medicine in medieval Europe? What was the medical basis for their popularity? What kind of medicine was used with spices and what was the virtue of these medicines? The primary purpose of this study is to answer these questions. First, we need to examine the theory and contents of medieval medical science, because the use of medicine generally follows the medical theory. Secondly, by analyzing pharmacology books, we found out the virtue of individual spices and the purpose of combination drugs made from various medicines including spices. Three main books on medieval European medicine, *Le livre des Simples Medecines*, *Tabula*, and *Trotula* were investigated in detail.³⁾

1) Carmelia analyzed more than 28,000 prescriptions. Softeners or solvents used to make medicines such as water, olive oil, wine, sugar, honey, and vinegar were excluded from the ranking. Pepper (1705 times), myrrh (1019 times), aloe (580 times), cinnamon (251 times), ginger (223 times), cardamom (162 times), cassia (146 times) (Opsomer-Halleux, 1992: 47-48)

2) This medical book introduces 123 prescriptions where 361 simple materials were used. Pepper, the most frequently used spice, was included in 33 prescriptions followed by aloe (15), cinnamon (12), cassia (8) and ginger (8). Honey, wine, rose water, and wax which was used as softener or solvent of the medicine, were excluded from this calculation (Riddle, 1965: 186-187)

3) There existed many other books on medicine in medieval Europe. For example the English monastery of Saint Augustine possessed more than two hundred titles of medical interest in the fifteenth century including Hippocrates, Galen, Avicenna, and Trotula (Rowland, 1981: 6).

II. Theory of Humors and Asian Spices

Spices were popular as medicine among Western Europeans during the Middle Ages because of the medical system of the time. The heart of Western European medical science in the Middle Ages was rooted in the humoral theory systemized by Hippocrates and Galen. The essence of humoral theory was the harmony between people and the universe. According to Empedocles (493-433 BC), a philosopher of ancient Greece, the universe is composed of four elements—earth, water, fire, and air—and each element has different warmth and humidity. These properties were more important than the element itself. Earth has cold and dry properties, water has cold and wet properties, fire has warm and dry properties, and air has warm and wet properties.⁴⁾

Hippocrates developed the humoral theory of the four humors—blood, yellow bile, black bile, and phlegm—which, like the four elements that compose the universe, have properties of their own, and these properties are in line with the four elements of the universe. According to humoral theory, blood, with its warm and wet properties, corresponded to air, warm and dry yellow bile to fire, cold and dry black bile to soil, and cold and wet phlegm to water. Because of these correlations, the laws of Nature and the universe affect all living creatures, and the human body suffers ailments when it is not in harmony or balance with the universe.

Galen (130-200BC) expanded on the humoral theory to establish the temperament or complexion theory, which asserts that the humors determine the personality of an individual.⁵⁾ According to the personality theory, there was generally no one with their humors in complete harmony, and it was common for one of the humors to be more dominant than the others (De la Haye, 1888: xxvii). He thought that physical constitution

4) It is believed that this philosophy was materialized by Empedocles (493-433BC) (Freedman, 2008: 53)

5) On Galen, refer to the following studies: Siegel (1968); Garcia-Ballester (2002); Irwin (1947: 57); Hankinson (2008: 304-322); Powell (2003: 10-13); Park (2009: 15-16).

and personality differed according to the types of predominant humors. In other words, people with predominant blood are sanguine, people with predominant black bile are melancholy, people with predominant phlegm are phlegmatic, and people with predominant yellow bile are choleric.⁶⁾ Here, sanguine means blood in Latin and *melan* and *khole* mean black and bile in Greek, respectively. In other words, the words for the humors and their properties set in as the terminologies for complexion (Freedman, 2008: 53-54).

According to the temperament theory, each of the bodily organs has its own complexion. It was thought that the heart was warm and the brain was cold (Siraisi, 1990: 102). Human body changes according to various internal and external factors. As people age, their bodies become colder and drier, and people in cold regions have colder and wetter personalities. Women have colder and wetter properties than men, and this is the reason for their timidity and their menstruation. At the time, Europeans believed that blood had the most important role of all bodily humors. Aristotle said courageous and wise men have warm, thin, and clear blood. In the process of making blood, other bodily humors were formed and these took the role of assisting the circulation of blood. Yellow bile purifies the blood and black bile strengthens the blood (Siraisi, 1990: 105-106).

Ancient Greek medical science including the temperament theory was introduced to the Muslim world, where it was developed further.⁷⁾ Techniques of making syrup type medicines using sugar or electuaries by mixing syrup or honey to powdered drugs were major achievements of the Muslim world (Siraisi, 1990: 100). In particular, Ibn Sina (980-1037) further developed the medical science of Galen (Abu-Asab, Amri and Micozzi, 2013: 50-85) during the late eleventh century. After ancient Greek medical

6) This system of thinking was challenged in the era of Enlightenment (Woolf, 2003: 247-248).

7) Guy de Chauliac, the doctor of the pope in the mid fourteenth century, always referred to Hippocrates and Galen of the ancient Greece and Avicenna of the Muslim world when he made medical references in his books (Balard, 1987: 127).

science was developed by the Muslim world in the eleventh century, many medical books in Arabic were translated into Latin and began to be introduced in Europe. This translation permitted medical schools of Bologna, Paris, and Montpellier universities—which were the most famous in the late thirteenth century—to greatly revise their curricula (Garcia-Ballester, 2002: 55-56; Freedman, 2008: 62-63).

Although advanced medical knowledge was introduced to Western Europe from the Muslim world in the late Middle Ages, the humoral theory and temperament theory established by Hippocrates and Galen didn't change much in their structures (Bonner, 1985: 1119-1120). The humoral theory was sometimes challenged from the Renaissance onward, but it continued to play a central role in European medical science until the 18th century.

According to the humoral theory, which forms the backbone of medieval medical science in the Western Europe, humors not only determined the temperament of a person, but also greatly influenced one's health. Based on the medical theory of the time, physical health could be divided into 3 categories—healthy, ill, or somewhere in the middle. The main reasons for the human body to derail from a healthy state to become ill were innate deformity, trauma, and humoral imbalance. Apart from innate deformity and trauma, which surgeons would take charge of, most immanent diseases were from humoral imbalance (Siraisi, 1990: 120). Therefore, Europeans at that time regarded the balance of humors to be extremely important for maintaining a healthy body. The belief that the humoral balance took an important role in maintaining physical health was shown from the fact that people put a big emphasis on the liver and spleen which control the production and circulation of humors. At the time, people thought jaundice was caused from pooling of decomposed bile when the liver—which creates yellow bile—was ill. Also, people believed that they suffered from melancholia when their spleens—which absorb toxic black bile—were damaged. People thought that when bile with cold property flows

into the respiratory system, it causes symptoms of fever, pneumonia, or congestion of the womb. In particular, abscess was regarded as a disease caused by black bile bundled up in the body instead of being readily circulated (Ospomer-Halleux, 1984: 17).

In European society of the late Middle Ages, the humoral theory was well known not only to doctors but also among common people (Hunt, 1994: 64; Syros, 2013: 161-213). Because medieval Europeans believed in humoral theory, they thought that 6 external factors—air, food, excretion, exercise, sleep, and emotion—affected the flow and balance of humors. In order to balance humors, doctors at the time either extracted excess humor or neutralized it using medicine with different property from the humor. In order to extract excess humor, doctors often let the blood out⁸⁾ and used purgatives. A spice from Asia called scammony was used to excrete red bile out of the body (McVaugh, 1982: 250). Black pepper and fig wine were used to remove thick bile from the lungs and respiratory organs.⁹⁾

III. Effects of Spices in Pharmacology Books

III-1. *Le Livre des Simples Medecines*

As shown earlier, in order to balance humors, extracting excessive humor and neutralizing humor by taking medicine of different properties were the key treatments. Therefore, pharmacology books at the time focused mainly on these two treatments. Most pharmacology books explained medicine and drugs by classifying them into four properties: warm, cold, dry, and wet properties. These are in relation to the properties of the four humors (Ospomer-Halleux, 1984).

8) Bloodletting, which started from the ancient times, continued until the 19th century (Siraisi, 1990: 97).

9) In his book in French published in the 15th century, the author explains the effect of pepper referring to assertions by Constantinus Africanus in the 11th century and Dioscorides, a doctor of ancient Greece (Ospomer-Halleux, 1984: 229).

Then, which properties did these spices have and what were their effects? The properties and effects of individual spices are well explained in pharmacology books of simple medicine.¹⁰⁾ Among these, the most famous book was *Circa Instans* written by Matthaeus Platearius, a prominent doctor of Salerno Medical School in Southern Italy during the 12th century. In writing this book, he referred to the books of Dioscorides, Galen, Oribasius, and Constantine the African. This book provides a brief enumeration of the synonyms of the plant concerned, the category of the plant, and a description of the properties of individual simple medicine, its origin, its effect, the products associated with it, and its substitutes. Particularly, it never fails to explain four qualities (hot, cold, dry, and moist) of the simple medicine and their degrees. In this book, 273 simple medicines and their effects are explained. Among these, 229 are plants, 14 are animals, 28 are minerals, and 2 are preparations.

From the 13th century, his book was translated into French, English, and German. In the translation process, new plants were added. The French version called *Le Livre des Simples Medecines* includes 472 medicines. This book had gained popularity and authority as the elementary medical book in the Later Middle Ages, so the faculty of medicine in Paris recommended it as the codex for herbalists in 1422, and the physician Saladino of Ascoli in the fifteenth century considered it a book essential for apothecaries to exercise their art excellently (Ospomer-Halleux, 1984: 9-12, 15).

The French edition explains in detail the properties and effects of common Asian spices such as pepper, ginger, cinnamon, cloves, nutmeg, and mace. These six main Asian spices were most eagerly searched for by the medieval Europeans. The following table shows the effects of these six spices, which appear in the French version published in the 15th century.

10) The simple medicine means that it is not mixed with another medicine and used in its natural state

Table 1. Asian spices and their effects in *Le Livre des Simples Medecines*¹¹⁾

Spices	Effects
Pepper	It is hot to the beginning of the fourth degree and dry to the middle of the fourth. Item, the wine in which black pepper has cooked with figs removes the thick sticky phlegm from the chest and respiratory organs, and it is very effective for asthma caused by cold. Item, powdered pepper gnaws away the dead flesh of sores
Ginger	It is hot to the third degree and moist to the first. Item, the wine which has been cooked with figs and raisins de Carême is good for cough of cold cause and for cold of the chest. Item, the wine in which ginger has cooked with cumin is good for stomach pain provoked by flatulence, and this procures good digestion. Item, for tenesmus, put powdered ginger on a cloth onto the anus. The powder put into food is good for heart weakness and syncope.
Cinnamon	It is hot in the third degree and dry in the second. It fortifies the brain by its good smell, if forms scars and knits together the wounds. Item, for weakness of the stomach and liver and to help digestion weakened by cold, put into the patient's food and sauces powdered cinnamon and caraway. Item, to restore appetite lost through humors of the stomach, make a sauce of cinnamon powder, sage, parsley, and vinegar and use it. Item, for recently cracked lips and other sores, put powdered cinnamon on the sore. Item, for heart ailments and syncope, give powdered cinnamon with powdered leaves of the clove tree. Item, the large kind of cinnamon is used in strong medicine.
Cloves	They are hot and dry in the third degree. Item, by their good smell they fortify, and by their quality they spread and disperse humors. Item, to aid digestion, give the wine in which these cloves have been cooked with fennel seed. Item, for suffocation of the womb, make a preparation of powdered cloves and strongly perfumed wine and apply to the fundament or make a pessary on it. Item, for diarrhea caused by a very strong medicine, boil 9 or 10 cloves in a glass phial with rose water and mastic, and give it to the patient slightly warmed. Item, for heart pains and syncope, give powdered cloves with borage juice.
Nutmeg	It is hot and dry to the second degree. It fortifies by its good smell and qualities. Item, for cold of the stomach and bad digestion, and to improve the color of the face, give in the morning 1 dram of nutmeg, this is very good. Item, the wine in which nutmeg has cooked with anise and cumin, cures pain of the stomach and intestines caused by flatulence. Item, the wine in which nutmeg has cooked with mastic should be given to convalescents so that they recover their good spirits. To fortify the brain and respiratory organs, let the patient breathe in the fragrance of this nut, it is good.
Mace	It is hot and dry to the second degree. Item, to aid bad digestion and cold of the stomach, the wine in which mace has cooked is good. Item, to purge the brain of excess of humors, chew some mace and keep it in the mouth for a long time so that its scent may rise to the brain. For weakness of the stomach and liver from cold cause, for the dropsy we call leucophlegmacy, for gripes, asthma, and other diseases of the chest caused by thick phlegm, cook mace in fennel juice. Finally, when it is cooked, add a little wine, strain, and give to the patient, it is a sovereign remedy.

11) This table is extracts from the *Le Livre des Simples Medecines*. Ospomer-Halleux, 1984: no. 85(cardamom), no. 95(cinnamon), no. 185(cloves), no. 187(galangal), no. 288(nutmeg), no. 307(mace), no. 329(pepper), no. 468(ginger)

As this book shows, Asian spices were used as important medicines because of their warm and dry properties. Because almost all Asian spices have warm property, they were used to treat cold, asthma, and indigestion caused by cold weather. Therefore, medieval medical books classified most medicines including spices into four degrees of warmth, coldness, dryness, or humidity (Fabbri, 2007: 255). The first degree is the weakest, and the fourth degree has the strongest property of simple medicine. Galingale, cardamom, nutmeg, and mace are hot and dry to the second degree, cinnamon is hot to the third degree and dry to the second, ginger is hot to the third degree and moist to the first, and pepper is hot and dry to the fourth degree. Therefore, pepper, with its strongest warmth and dryness among other spices, was the strongest medicine which could confidently produce medical benefit. Although it isn't certain if this was the main reason, pepper was the prominent Asian spice which took half of the medieval Europeans' total imports of spices (Wake, 1979: 393).

Asian spices were believed to take an important role in maintaining the balance of humors essential for a healthy body. Pepper and mace were used to remove the sticky phlegm with cold and wet qualities from the chest and respiratory organs. Clove was used to make humors to circulate and spread well throughout the body. Medieval European people chewed mace or kept it in the mouth for a long time to get rid of excessive humors from the brain. In addition, Asian spices were used to treat diseases and sores in many organs of the body including chest, respiratory organs, stomach, heart, brain, liver, lips, womb, and face. Cinnamon had effect to fortify the brain by its good smell and to strengthen a weakened stomach. Clove was a strong medicine to treat heart pains, syncope, and suffocation of the womb (Ospomer-Halleux, 1984: 229, 163-164, 219).

The analysis of the book of simple medicines proves that Asian spices were widely used to treat numerous illnesses in the medieval Europe. However, simple medicines that are used in natural state without mixing with other medicines were inadequate for serious diseases like epilepsy

and leprosy. It was therefore necessary to make a compound remedy consisting of two or more simple medicines, since the compound medicine was believed to have more powerful effect than the simple medicine. And to treat opposing afflictions like a cold stomach and a hot liver, a compound medicine was needed whose opposing qualities could treat each affected parts of the body (Ospomer-Halleux, 1984: 53-54).

III-2. *Tabula*

Spices were also often used in compound medicines made by mixing many ingredients. This fact can be found in the *Tabula*, a summarized list of a number of common compound medicines, written by Armengaud Blaise who was a nephew of Arnau de Vilanova, a celebrated figure in medieval history for medical writing (McVaugh and Ferre, 2000: 1-10; McVaugh, 1993). Although outshined by his uncle, Blaise's career was also brilliant. He earned his Master's degree from the medical faculty at Montpellier, served the Aragon Royal family, and worked as the doctor for Pope Clemens V in his final years. He translated several works of Galen and Avicenna into Latin and made two of his own medical compositions.¹²⁾ One of them deals with urine analysis and dietary treatment in detail. The second medical book is the *Tabula*, where he explains common compound medicines and their principal ingredients and properties.

The *Tabula* describes main substances, external features, effects, dosage, and ingesting methods of compound medicines. This is a medical book that tells readers how to use compound medicines on patients, instead of telling them how to make compound medicines. Therefore, it was a very useful book for doctors who dealt with patients in hospitals. After 1200, medical schools were utilizing as textbooks the various types of professional medical books that were translated from Arabic to Latin.

12) He translated '*Cantica*' by Ibn Sina in 1283 (1284) and '*De cognitione vicium*' by Galen from Arabic to Latin in 1299

However, because these books provided excessive amount of information, they weren't suitable for doctors in the field. So, frontline doctors preferred simplified and summarized books such as the *Tabula*, which they could use conveniently (Mcvaugh and Ferre, 2000: 6).

This book deals with 73 compound medicines. Individual drugs are classified into four types according to their therapeutic functions. The first group is of simple syrups. The second group is of electuaries arranged according to the members they strengthen. The third group is of laxatives used to remove the humors. And the last group is composed of opiates whose effectiveness is relatively stronger than the first three groups (Mcvaugh and Ferre, 2000: 6). Generally, compound medicines were based on one or two key ingredients, and additional ingredients took the role of strengthening or modifying the effects. Around 12 simple medicines were used to make a compound medicine (Fabbri, 2007: 254-255). The compound medicines with various ingredients were thought to be more effective than the simple medicines.

Let's look at the compound medicines containing Asian spices and their effectiveness as described in the *Tabula*. *Gallia muscata*, the main ingredient of which is cinnamon, is good for syncope and repairs the spiritual members. *Stomaticon fridigum*, made of water lilies, can be administered hot with the extraction of galingale, cinnamon, or nutmeg. This medicine is good for excessive stomach heat, just as it can be hot against an excess of cold, and it serves as a laxative in the case of constipation. The compound medicine of *Gariofilatum* is made of cloves and cinnamon. It is good for the stomach, liver, heart, digesting food, and holding back gas. It is also effective against obstructions in the nutritive and spiritual members. Particularly those of hot complexion should take this drug with rose water or with a decoction of citron in the summer. *Zinziber conditum* is made of ginger, which is hot to the end of the second degree and dry to the beginning of the same. It has effectiveness to cure indigestion caused by cold. *Rubea trociscata*, made of cinnamon and opium, belongs to the group of opiates. This

compound medicine treats tertian fever caused by cholera and is good for an overflow of humors from the head into the eyes. A drug called *Filonium* is composed of a main ingredient of long pepper and other secondary simple medicines. It is effective for any pain due to coldness or gas, or the presence of thick matter such as colic without abscesses and hemorrhage. *Dyacostum*, made of wild ginger and costmary, is the drug which appears last in the *Tabula*. It is good against fleshy anasarca caused by coldness of the liver or a blockage of the spleen and liver (Mcvaugh and Ferre, 2000: 62-63, 72-73, 86-89, 162-165).

An analysis of the *Tabula* reveals that the author was based on the humoral theory of Galen and Avicenna in making his compound medicines. He frequently cited Galen and Avicenna, as when he explained that a triple dose of *filonium* is equivalent to one dose of opium (Mcvaugh and Ferre, 2000: 162-163). For the effectiveness, compound medicines with Asian spices were used as purgatives that excreted excessive humors, tonics that strengthened bodies weakened by coldness, and antidotes that neutralized toxins (Fabbri, 2007: 252). Conclusively, it was for their warm and dry properties that Asian spices were often used in making compound medicines, and they were used to treat diseases and excessive humors caused by cold.

Among all the other compound medicines, theriaca was known to be remarkably effective in many diseases. It was known as the panacea in medieval European society. According to the *Tabula*, no compound medicine is more effective than theriaca in tempering the human complexion, inducing lightness of heart and dissipating sadness, and in countering poisons. However, the *Tabula* only mentions flesh of snakes as its ingredient, and it doesn't explain in detail about its production method. However, several other records prove that the most principal Asian spices were used to make theriaca. In medieval European society, the most famous theriaca was made by the medical faculty of Montpellier University and Venetian theriaca. The latter was also popular to the extent

in which they were exported to all over the Europe (Freedman, 2008: 68; McVaugh, 1972: 254; Granel, 1976: 78). Montpellier theriaca used main Asian spices such as long pepper, black pepper, white pepper, ginger, cinnamon, and cardamom. It was widely advertised that cinnamon had the effect of excreting excessive humor and that ginger, pepper, and cardamom had the function of vitalizing the body. Therefore, Montpellier theriaca gained international reputation for its good quality ingredients and strict production procedure. As many as 83 medicines were used, most of which were imported from abroad. Also, masters of the Montpellier medical faculty made annual public demonstrations of theriaca production in front of the public to gain official approval of the quality. Events showing 83 kinds of medicines to the public were held for over 2 weeks. Montpellier produced around 550kg of theriaca every year (Granel, 1976: 76-81).

III-3. *Trotula*

Asian spices were also used to treat women's diseases, which is a fact proven in the *Trotula*, a unique and special medical book on the diseases of women.¹³⁾ First written in Latin in the 12th century, it circulated throughout the Western Europe and was translated by the 15th century into different European languages including Italian, Dutch, English, French, German, and Irish (Green, 2002: preface). Even though there is a debate about its authorship, it is considered as one of the most important and authoritative texts on women's medicine in medieval Europe.¹⁴⁾

This gynecological literature for women is composed of three parts: the conditions of women, treatments for women, and women's cosmetics. Like the two previous medical texts, this book was also firmly based on the

13) On women's medical practice and health care, refer to Green's works (Green, 2000).

14) It is estimated to have been written by the first female doctor called Trotula who taught students in Salerno University in the 12th century. But recent research shows skepticism of this estimation (Green, 2000: xiv-xv).

humoral and complexional theory of Hippocrates and Galen. The author mentioned that he had labored to gather the books of Hippocrates and Galen to explain and discuss the causes of women's diseases, their symptoms, and their cures.¹⁵⁾ Also, explanations of the diseases and prescriptions consider humors and complexions of individual women that certain women are hot while others are cold. The *Trotula* gives many prescriptions of Asian spices with hot and dry qualities to treat several diseases caused by the cold. For example, clove and nutmeg were prescribed to strengthen cold womb and to increase conception. Those hot and dry spices were considered to be efficient for pain of womb that happens from frigidity or miscarriage. Women with their teeth loosened by the cold can take wine in which ginger and galangal are boiled. On the contrary, if a woman suffers from a hot cause, she could take cold herbs including marsh mallows, violets, and roses in water (Green, 2002: 65, 89-90, 103, 109).

A close analysis of the *Trotula* shows that Asian spices were important medicines essential for treating women's diseases. This fact is attested by an early fifteenth century English treatise called *Medieval Woman's Guide to Health*, where many medicines of Asian spices are mentioned (Rowland, 1981: 67, 83, 85, 91, 93, 95, 101, 103, 107, 119, 139, 153, 163, 171). In Galenic gynecology, one of the most important and basic physiological process unique to the female body was menstruation. Therefore, the *Trotula* treats diseases or problems of the menses firstly of all. This book prescribes rhubarb, dry mugwort, and pepper if the menses have been deficient for a long time. A certain French physician prescribed ginger and laurel leaves for paucity of the menses. On the contrary, clove and Nutmeg were used for excessive flux of the menses from an abundance of phlegm and black bile which are cold (Green, 2002: 90).

15) Other English gynecological handbook, *Medieval Woman's Guide to Health*, was also based on the theory of humors. It says that women have less heat and more moisture than men, so lack of heat in women's body can dry their moisture and humors (Rowland, 1981: 59, 61-65).

Another important female organ is the womb which receives special attention in the *Trotula*. *Medieval Woman's Guide to Health* also describes that the uterus is a female organ which tends to cause diverse illnesses and that it needs continuous care and treatments (Rowland, 1981). The *Trotula* explains that the womb tends to descend down from its original place on the account of abundant cold humors and weakened ligaments, so that it should be heated and fumigated.¹⁶⁾ Therefore, several Asian spices like cinnamon, nutmeg, and cloves with hot and dry qualities were used for the womb after giving birth. The powder of cinnamon and cumin is efficient for the rupturing of the vagina after giving birth. Pregnant women with their distended belly were advised to take cloves, wild celery, mint, iris etc. Clove, nutmeg, and spikenard were used to treat cold wombs. Clove, nutmeg, and galangal were used to soothe pain of the womb from the cold or miscarriage (Green, 2002: 68-70, 77, 89-90, 109-110).

Asian spices were also used in various beauty treatments. According to the *Trotula*, medieval European women desired to become very soft and smooth without any hair below their head. The white face and teeth were also considered as important quality of beauty. Ginger was mixed with egg and mustard for whitening the face. Particularly, a medicine called *cerotum* was prescribed for whiter complexion.¹⁷⁾

Teeth were important in terms of beauty and hygiene for woman, because corroded black teeth caused bad odor and unattractive look. According to the prescription of the *Trotula*, women grinded ingredients including cinnamon, clove, spikenard, mastic, frankincense, grain, etc., and rubbed on the teeth with this powdered medicine. To treat pain from

16) *Medieval Woman's Guide to Health* also gives a similar explanation that the precipitation of the womb was often due to the retention of the blood and evil excessive humors in the womb (Rowland, 1981: 99).

17) The *Trotula* explains that "Let oil of violets or rose oil with hen's grease be placed in a clay vessel so that it boils. Let very white wax be dissolved, then let egg white be added and let powder of well-powdered and sifted white lead be mixed in, and again let it be cooked a little. Then let it be strained through a cloth, and to this cold strained mixture let camphor, nutmeg, and three or four cloves be added"(Green, 2002: 118).

the rotten teeth, they used black pepper and clove with ammonium salt and costmary. For example, a woman with bad breath was prescribed with quicklime, natural sulfur, orpiment, burnt gourd, and pepper (Green, 2002: 112-113).

Asian spices were frequently prescribed for various kinds of adornments of women. Cinnamon, nutmeg, and clove were used for making an ointment to remove hairs, to refine skin, and to get rid of blemishes. This ointment was used as a depilatory that noblewomen were accustomed to for softening the skin. The medieval women used powder made of clove, nutmeg, dried roses, watercress, and galangal for combing their hair. Noblewomen wore clove or musk in their hair for sweet scent. The powder of cinnamon and roses was good for fissures of the lips and for putridity of the gums (Green, 2002: 113-115, 117-119, 122-123).

IV. Conclusion

Asian spices were used as important medicine in Medieval European society, because of the unique medical system in Europe called the humoral theory. The analysis of three major medical textbooks of the Middle Ages proves that most oriental spices with hot and dry qualities were employed to cure diverse diseases, particularly those caused by coldness and humidity.

It should also be remembered that the social values and psychological recognition such as placebo effects play a very important role in the use of these medicines. Asian spices were considered to be more effective than the native European ingredients in the medieval European society (Riddle, 1965: 187). So, people preferred medicine with Asian spices if they could afford it. For this reason, doctors prescribed cheaper medicines made of native herbs to poor patients, and medicines made of imported spices to rich patients (Freedman, 2008: 69). For what reasons did Europeans regard Asian spices to be special? One of the primary reasons was because Asian

spices were more expensive than European native spices. As in the old French saying, ‘as expensive as pepper (*cher comme poivre*),’ Asian spices were valuable items in Europe.¹⁸⁾ Inaccuracy or lack of information on the origin, production procedures, and distribution routes made Asian spices more mysterious, and this mystique increased their value (Smith, 2001: 119-122; Da Orta, 1996: 2).

The most important reason for Europeans to value Asian spices was related to the belief in Paradise (Nam, 2009: 145-151). As written in the Book of Genesis, one who eats the fruits of Paradise will live an eternal life and will not become tired from illnesses or worries; Asian spices from Paradise were considered to have miraculous effects and special meanings. Roger Bacon said that he could make the perfect medicine that can extend the lives of people, and this medicine could perfectly balance all the elements of the human body to prevent it from decomposing and aging. This medicine could probably have been theriaca. To make it, vitalizing pearls, anti-aging rosemary, ambergris, aloe wood, heart of long living stag, flesh of snake, and spices were used (Bacon, 1962: vol.2, 615-626).

However, not everyone believed that the medicine made of Asian spices had special effects. In 1147, in his letter to a friend suffering from a severe cold, an abbot promised to send a medicine called *dyacamentum* that was known to have curing effects for coldness in the winter. This medicine was a mixture of common European garden plants including catmint hot and dry to the third degree, parsley, lovage, celery, wild thyme, and fennel. The abbot assured his friend that this medicine had the same effectiveness as the expensive drug of *dyamargariton* which was made from powdered pearls, cloves, cinnamon, aloes, nutmeg, ginger, ivory, and camphor.¹⁹⁾ John of Arderne, a 14th century English surgeon, also

18) In the Archives of Prato in Italy are preserved price lists of some of the major European markets from around 1400. These lists show prices of various types of products (ASP, Datini busta 1171)

19) According to the *Tabula*, *dyamargariton* was used to cure palpitations, blackouts, and sadness, and to recover the spirit (Mcvaugh and Ferre, 2000: 64; Ospomer-Halleux, 1986:

said that common native herbs worked just as well as more expensive and noble medicines, and the former weren't exceptionally more effective than the latter (Freedman, 2008: 70).

However, despite these objective assessments and prescriptions, many medieval Europeans still preferred expensive medicines made with Asian spices. In conclusion, as long as there was a unique social recognition of Asian spices by Europeans, medicine made with Asian spices continued to have special meanings and belief in their effects.

Keywords: Humoral Theory, Temperament Theory, Hippocrates, Galen, Avicenna, Asian Spices, Paradise, Pepper, Ginger, Theriaca

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105; Freedman, 2008: 70).

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- Abstract -

Medieval European Medicine and Asian Spices

NAM Jong Kuk*

*Department of History, Ewha Womans University, Seoul, KOREA

This article aimed to explain the reasons why Asian spices including pepper, ginger, and cinnamon were considered as special and valuable drugs with curative powers in the Medieval Europe. Among these spices, pepper was most widely and frequently used as medicine according to medieval medical textbooks. We analyzed three main pharmacology books written during the Middle Ages.

One of the main reasons that oriental spices were widely used as medicine was due to the particular medieval medical system fundamentally based on the humoral theory invented by Hippocrates and Galen. This theory was modified by Arab physicians and imported to Europe during the Middle Ages. According to this theory, health is determined by the balance of the following four humors which compose the human body: blood, yellow bile, black bile, and phlegm. Each humor has its own qualities such as cold, hot, wet, and dry. Humoral imbalance was one of the main causes of disease, so it was important to have humoral equilibrium. Asian spices with

* Department of History, Ewha Womans University.

Address: 52 Ewhayeodai-gil, Seodaemun-gu, Seoul, 120-750, KOREA

E-mail: namjk0513@ewha.ac.kr.

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hot and dry qualities were used to balance the cold and wet European diet.

The analysis of several major medical textbooks of the Middle Ages proves that most of the oriental spices with hot and dry qualities were employed to cure diverse diseases, particularly those caused by coldness and humidity. However, it should be noted that the oriental spices were considered to be much more valuable and effective as medicines than the local medicinal ingredients, which were not only easily procured but also were relatively cheap. Europeans mystified oriental spices, with the belief that they have marvelous and mysterious healing powers. Such mystification was related to the terrestrial Paradise. They believed that the oriental spices were grown in Paradise which was located in the Far East and were brought to the Earthly world along the four rivers flowing from the Paradise

Keywords: Humoral Theory, Temperament Theory, Hippocrates, Galen, Avicenna, Asian Spices, Paradise, Pepper, Ginger, Theriaca