Relative Roles of Native Herbs and Foreign Spices in 13th-17th Century European Medicine

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Abstract

European medicine between the thirteenth and seventeenth centuries depended largely on plant ingredients, including local species such as mandrake, wormwood, and henbane. However, the redevelopment of trade during this time period led to the increasing medical importance of foreign spices, including pepper, ginger, and cinnamon. This thesis aims to add dimension to existing knowledge of European herbal medicine, or herbalism, by discussing the relative roles of local plants and foreign spices. Doing so will help to remove bias against the efficacy of medieval and Renaissance medical practices, while highlighting the historical importance of certain species to allow the possibility for future research on their active compounds and medicinal effects. Literature review of herbal compendiums, case studies, and books has shown that, though spices and herbs were not economically comparable, they each had essential roles in European medicine, with uses ranging from anesthesia to reproductive health. In addition, they developed reputations that reflected their positions in religion, society, and literature. Thus, an expanded discussion of these contexts is provided in order to explain the influence of foreign spices and local plants on medieval and Renaissance European culture.

Key terms: European herbalism, compound medicine, mandrake, women's reproductive medicine, sympathetic magic, spice trade

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1. Introduction

Plants have always been closely intertwined with human culture and history, especially in the realm of medicine. Historically, plants with pharmacological and medical effects have been regarded as highly valuable throughout all societies – beyond that, the importance of plants to humans was affected by the plants' properties, be they chemical or abstract. This was especially true in Europe from the thirteenth to the seventeenth centuries, when herbal medicine ("herbalism") depended not only on local plants but also on foreign spices for health and healing. However, the importance of medicinal plants to medieval and Renaissance Europe led to certain developments in the roles of plants in religious, social, and literary contexts. This thesis aims to show that the rationales behind the importance of foreign spices and local herbs were unique, so that neither became dominant in herbalism.

The study of herbalism is related to a need to expand, clarify, and explain ethnobotanical knowledge of the past. Twenty-first century medicine revolves around diagnoses of specific ailments and the targeted use of pharmaceuticals as treatment. In contrast, herbalism ascribed qualities and powers to its ingredients that were based not simply on chemical effects but also on concepts and beliefs that are no longer popular in modern settings. Thus, modern opinions of herbalism often dismiss it as ineffective due to a perceived dependence on ritual and superstition. It is worthwhile to address and correct this bias, especially as ongoing studies of medieval and Renaissance Europe continue to reveal the reasoning and sophistication present in medical literature and treatments of the time.

2. Cultural Developments in Europe from the 1200s to the 1600s

Medieval and Renaissance medicine is often thought to be outdated and ineffective, due to its supposed association with the "Dark Ages." This misnomer, which originally addressed the period between the fifth and fifteenth centuries, rose from the misguided perception of Europe as intellectually and culturally crippled following the collapse of the Holy Roman Empire. However, modern research has shown that while certain practices were indeed underdeveloped or lost, cultural developments did occur that enabled the growth of medical knowledge in Europe. As a result, the practice of herbalism survived throughout Europe, growing even during the "Dark Ages" and well into the Renaissance. That is not to say that herbalism between the thirteenth and seventeenth centuries met present-day standards of medicine; however, it must be acknowledged that stagnation was not a defining factor of European medical practices during this time, due in large part to the invention of the printing press and the redevelopment of trade routes with the East.

What written knowledge was available in Europe in the early Middle Ages was copied by hand in monasteries, and therefore it was slow to disseminate through the population. The invention of the printing press in the fifteenth century expanded the reach of medical practitioners, not only by allowing quicker distribution of recorded information but also by encouraging the publication of novel works. As printed texts increased in number from the fifteenth century onward, physicians and apothecaries eventually moved away from oral tradition and teacher-apprentice styles of learning, congregating instead in universities. Curricula included the writings of Galen, Dioscorides, and Avicenna, all of whom were ancient recorders of herbal and medicinal knowledge (Riddle 102). The printing press therefore allowed physicians in

medieval and Renaissance Europe to go beyond earlier practices, with secure knowledge of existing diagnoses and treatments.

Use of the printing press also encouraged publication of new information, whether it was an original discovery or a clarification of previous knowledge. The earliest printed herbal texts ("herbals") included the German *Tractatus de virtutibus herbarum,* published in 1484 as a distinct, novel presentation of knowledge from older sources (Riddle 140). Within Europe, compilations of regional knowledge began to appear that catalogued local plants, their effects and uses, and the lore surrounding them. These works included Schoeffer's *Herbarius Latinus* in 1484, which gathered folklore about local plants; Treveris's *The Grete Herball* in 1526, one of the first widely disseminated English texts; and Turner's *New Herball*, which was finished in 1568 and provided a structured guide to herbal and botanical information (Mann 116-117). Because European herbalism had not been seriously affected by the Holy Roman Empire's decline, a continuing stream of knowledge existed from ancient sources to European herbals, allowing physicians to identify, gather, and use plants with confidence and efficacy. Because publication and distribution became easier and quicker throughout Europe, printed herbals not only furthered a surviving practice but also expanded it to a wider audience.

Herbalism was not restricted to the use of local plants, but the fall of the Holy Roman Empire had stymied the trade of ingredients between the West (Europe) and the East (Asia). By the thirteenth century, contact had been restored by the Crusades and by routes recorded by merchants such as Marco Polo. As connections were restored between Europe and Asia, currents of trade and travel brought foreign plant products that, like local plants, accrued various uses in herbalism. Foremost among these imports were spices, which would eventually provoke European exploration over much of the globe.

To prevent confusion, clear explanations of the terms discussed in this thesis must be given. “Spices” in this thesis will refer to non-European plant products imported to Europe, most often in their dried form. Inorganic spices such as salt are excluded, as well as any rare animal substances such as ambergris. The plants found commonly in the European landscape will be referred to as local herbs, though it should be remembered that not all of them are herbaceous (that is, not all are non-woody, as the botanical use of “herb” would suggest). In addition, not all herbs discussed in this thesis are relevant to the culinary arts. Some, like rosemary, would be familiar on a plate; others, like deadly nightshade, would be expected anywhere but. An extensive list of the species discussed, including spices, can be found in the Appendix.

Spices have had a large role in cooking, even into the modern day. However, it must be noted that, historically, they have had uses outside the culinary, with considerable value in medicine in particular. The reinvigoration of the spice trade in Europe allowed herbalists to develop treatments that depended on foreign plants, affecting the relative importance of local herbs as a result. Often, spices were perceived to be “stronger” medical ingredients, as will be discussed further in this thesis. However, they were not uniformly accepted as superior to local herbs, as differences did exist in how spices and herbs were used in herbalism. In turn, they each had differing influences on aspects of European culture outside medicine, including religion, society, and literature.

Finally, after defining the relative roles of spices and herbs within herbalism, this thesis will turn to the reputations of both within European culture. “Reputations” in this thesis is taken to mean the perceived importance of the selected plants to the European population, which was informed by the medical significance of each plant in question. After establishment of the medical perspective, discussion will then address the portrayal of foreign spices and local herbs

in religious, social, and literary contexts, in order to demonstrate the effects of herbalism on European culture between the thirteenth and seventeenth centuries.

3. Methods and Principles of Herbalism

The goals of herbalism were to cure ailments, preserve health, and record the medical effects of its ingredients. Its applications could be simple: comfrey, for example, was applied directly to treat minor wounds (Bevan-Jones 52). However, Riddle describes a growing emphasis on "polypharmacy" in the medieval and Renaissance periods, which called for the use of many different ingredients in each remedy (107). An example of polypharmacy was the Great Rest (*Requies magna*), a thirteenth-century anesthetic recorded by the physician Nicholas of Salerno. Its recipe, as recorded by Salerno in his *Antidotarium*, was as follows:

> Take three drams (10.244 g) each of roses and violets; one dram and a half (5.8 g) each of opium, henbane, meconium of white (opium) poppy, mandrake, wild lettuce, seeds of purslane, fleawort, nutmeg, cinnamon, and sugar. Two scruples and five grains (2.9 g) of white and red and citric sandalwood, ash, and tragacanth. Give with violet syrup to patients suffering acute fever; we can give it to them intermittently mixed with honey. (Everett and Gabra 444)

The Great Rest was effective for patients unable to sleep, due to fever or to severe pains. Notable ingredients in its recipe are henbane, mandrake, and opium, which in the modern day are more likely to be associated with toxic rather than beneficial effects. The use of these three in the Great Rest created a risk of death, not sedation; but Everett and Gabra note the care with which Salerno recorded his measurements and instructions, concluding that the Great Rest was designed to prevent overdose in its patients (447). Salerno's notes on the Great Rest gave serious

warnings of its potential lethality, guiding physicians to administer it with attention and care. A less direct indicator of his attentiveness is found in the amount of the Great Rest his recipe produced: "one or two pounds" at most, which was to be used in small, chestnut-sized portions (Everett and Gabra 447). Though Everett and Gabra acknowledge that a wide range of diameters and packing densities was possible for the "chestnut," Salerno's explicit instructions regarding dosage are promising support of his caution in making it available to herbal practitioners.

It is also important to note that the medical efficacy of herbalism was based on cultural concepts unfamiliar to the modern perspective. Prominent among these was the belief in humoral theory, which had spread to Europe from earlier Greco-Roman times. Under this theory, the base qualities of the world – heat, cold, moisture, and dryness – were believed to compose the fluid "humors" of the human body, defined to be blood, yellow bile, black bile, and phlegm. The unique mixture of humors in an individual subsequently affected the "temperament," which in medieval Europe meant one's overall health and predisposition to illness. Further, humoral theory held that foodstuffs themselves were composed of the base qualities, and therefore they affected their consumers' temperaments. It is in this way that the diet was integral to medieval and Renaissance medicine: food was recognized as having an immediate effect on the human body, not simply in terms of energy but also in terms of humoral balance. In many cases, medical treatments were prescribed to rebalance or preserve the ideal temperament of the patient, particularly by combining plants of different qualities to produce the desired effects.

Medicine in the late medieval and Renaissance periods also focused on the concept of sympathetic magic, which stated that objects or events with similar characteristics, whether physical or abstract, could affect each other when used in certain ways. In herbalism, plants that would treat certain ailments, injuries, or organs had corresponding physical characteristics. The

resin called dragon's blood, for example, was recommended in the fourteenth century to control bleeding, due to its vivid red color (Jones 167). European medical practitioners believed firmly that the beneficial powers of a plant ingredient was a result of its physical qualities, or "virtue." Dendle describes this virtue, or *dynamidia*, as a "wonderful, divine property" that hinted at the benefits of a plant, and there was an enduring faith in "virtuous" plants that accepted them as vessels of celestial power (56). Proof of a plant's divine potential varied in reasoning: the lily root was prized for its "noble," perfect temperament, due to its precise balance of humors, while the peony was believed to have great medicinal power because it supposedly shone in the dark (Jones 168; Dendle 56). However, all *dynamidia* was instilled in plants by a divine hand, justifying their beneficial use in herbalism. The virtues of plants were often drawn out by complex recipes such as the Great Rest, but at other times a broader sense of protection was invoked directly from one plant, as in the following prayer:

> Herb *ricinum* [castor-oil plant, *Ricinus communis*], I pray that you heed my incantations, and that you ward off hail, lightning, and all storms, through the name of omnipotent God who bid you to be created. (Dendle 55)

It is this combination of ritual practice and pharmaceutical recipe – the equal credibility of sympathetic belief and carefully measured remedies – that endured and developed in Europe between the thirteenth and seventeenth centuries, under the collective name of herbalism.

At first, humoral theory and sympathetic magic may seem to have diverted practitioners from credible, effective treatments, sending them instead toward superstition and coincidence. However, even as the advent of the Renaissance energized scientific pursuits in Europe, the faith in both concepts persisted. In fact, herbalists from before the thirteenth century were likely somewhat aware of the chemical effects that their plant-based medicines could have; but

chemistry was simply not the focus of medicine at the time. Medicine in medieval and Renaissance Europe was, by its own rules, a professional mixture of pharmacy and magic. The system itself was a mystical one, not simply one supplemented by superstition; whether used in ritual or formed into drugs, medicinal plants were effective because of their *dynamidia*. The importance of the physical form, for example, was such that individual plants of the same species could have differing applications. Sixteenth-century herbalists Matthiolus and Fuchs prescribed borage, a local plant, to treat malaria, stressing that the number of stems on the harvested plant was an important indicator of *which* malaria it would counter best (Adams *et al.* 286). This distinction reflected how multiple forms of malaria have been recognized since ancient times: malaria tertiana, for which three-stemmed borage was recommended, causes fevers at three-day intervals, while malaria quartana, which called for four-stemmed borage, causes fevers at four-day intervals.

As a final defense of herbalism's efficacy, present-day research has indeed produced viable, chemical support for some of its recipes. For example, modern analysis of the Great Rest indicates that the use of henbane and mandrake introduced quick-acting alkaloids – hyoscyamine and scopolamine, specifically – into a patient's bloodstream, sedating patients until the longer-term effects of opium's morphine set in (Everett and Gabra 448). More specifically, Salerno's recipe harnessed the disorienting effects of henbane, which discouraged patients from overdosing on the Rest in attempts to quickly dampen their pain. Thus, even without detailed knowledge of the compounds within his chosen plants, Salerno ensured that powerful, complex medicines could be made safely accessible to many physicians. Though herbalism in its historical contexts did not depend on such chemically-based rationales, the case of the Great Rest demonstrates that

European herbalists had complex knowledge of their ingredients, which allowed them to make informed prescriptions that were effective, but not recklessly so.

To practitioners and patients alike, herbalism's effectiveness stemmed not only from the physiological effects of plants but also from how those plants appealed to social and cultural opinions. What plants offered to physicians, they offered to everybody else – a sense of healing, aid, and connection to a divine force that had placed both plants and humans in the world to begin with. It is because medicinal spices and herbs had detailed explanations for their power that they were principle elements in the development of European culture as a whole.

4. Medical Applications of Local Herbs and Foreign Spices

Local Herbs in Medicine

European texts and practices of the medieval and Renaissance periods relied largely on a selection of local plants, which were harvested, prepared, and administered in a variety of detailed routines. The extent to which local plants were used was such that the average medieval European could probably recognize more plant species than an average twenty-first century person would, due to the rural and agricultural lifestyle of most Europeans between the thirteenth and seventeenth centuries (Riddle 123). Botanical knowledge was even greater in physicians, who were often expected to procure their own ingredients. A surgeon of the fourteenth century, John of Arderne, recorded detailed descriptions of various plants in his texts, going so far as to list exact locations where the juniper plant could be found in England:

> … Its leaves are slender and sharp-pointed and it bears a few green berries which blacken when they are grown… It grows in Kent on Shooter's Hill on the road to Canterbury, and at Dorking in Surrey. It also grows in many other places in that county, also at Bedington

> near Croydon. Country folk are ignorant of its true name, calling it Gorst. And when it grows broad and low to the ground it is more fertile with its fruit. (Jones 176)

To Arderne, juniper oil was among the noblest of herbalism's ingredients, "fit for a king," and his description of the plant had the intent of guiding physicians directly toward it (Jones 168). As an herbalist whose goal was to provide useful knowledge, Arderne wrote practically, creating a guide that would furnish his fellow physicians with sufficient ingredients.

The local plants discussed in this thesis are varied and many, and they had an array of different uses in herbalism. Of the local species to be discussed, the mandrake will be addressed later as a particularly illustrative example. First, however, discussion turns to wormwood, sage, and henbane, which serve as brief examples of local plants used in European herbalism.

Wormwood is one of the most common ingredients listed in the *Leechbook* of Bald, which dates as far back as the tenth century (Bevan-Jones 150). From that time, its use in herbal treatments persisted throughout the medieval period and into the Renaissance. Wormwood was a popular remedy against snake bites, as well as intestinal parasites; hence its common name was based on its ability to combat "worms" of various types. Sixteenth and seventeenth century German herbals described wormwood as effective against malaria, instructing that either its leaves should be eaten or a liquid extract be made from it (Adams *et al.* 285).

Sage had the influence and status of a panacea in medieval Europe, as it was believed to cure many ailments and preserve wellness (Lehner and Lehner 111). Before the introduction of Chinese tea to Europe, sage was commonly grown in European gardens for use in therapeutic teas, to be drunk every day for good health. In medicinal recipes, sage could be prescribed for a variety of illnesses, including malaria, epilepsy, and the plague. Like many spices, sage was

commonly added to foods for its culinary effects; however, unlike many spices, the appeal of sage was in its accessibility, as it could be easily found, gathered, and applied by lower-class as well as upper-class Europeans. Thus a thirteenth-century poem called the *Regimen sanitatis salernitanum*, intent on describing the effects of various ingredients, praised it to no end:

> Why should a man die in whose garden sage grows? Against the power of death there is no medicine in our gardens; but sage calms the nerves, takes away hand tremors, and helps cure acute fever… O sage! The saviour! Of nature the conciliator! (Scully 70-71)

Certain plants were specifically applied with sympathetic magic in mind. Henbane, for example, was often used as an anesthetic and a painkiller, as in Salerno's Great Rest. When a patient's pain was not as severe as would necessitate the Rest, henbane still served a purpose. As late as the nineteenth century, henbane seeds were burned to produce short-term narcotic fumes, which patients inhaled to relieve the pain of toothache (Bevan-Jones 78). In addition, the root of the henbane plant was used as a talisman throughout the late medieval period and the early Renaissance. Between the tenth and eighteenth centuries, it was believed that the pain-relieving properties of henbane could be accessed by wearing its root as a charm, instead of ingesting it (Bevan-Jones 78). In a different vein, the root could be tied onto the left thigh of a woman who could not conceive, in order to produce a male child (Osborn 149). These last two uses of henbane's root fall under the theory of sympathetic magic, demonstrating how the use of one medicinal plant often ranged from the physiological to the mystical. In the case of henbane, both strategies persisted well beyond the Renaissance, proving the longevity and perceived credibility of its medical effects.

The belief in plants as talismans was not restricted to a choice few species in Europe; rather, the principles of *dynamidia* and innate power supported such a use. Dendle cites the

discovery of "bronze and silver amulet capsules" in Europe that contained certain plants, among them henbane leaves, not as ingredients of a drug but as talismans (52-53). The instructions in various medical texts of the time indicated that carrying a remedy, rather than ingesting it, could be enough to produce beneficial effects. The reasoning behind this strategy may be examined in the case of plantain (a small local plant, not to be confused with the fruit of the same name), which appeared in a variety of medical contexts in medieval Europe. A hardy plant, plantain grew along roadsides and was often crushed by passerby, and yet it did not die. A charm in Old English lauded plantain's resilience, asking it to protect its users from "poison and flying-disease" just as it protected itself from trampling (Dendle 53). John of Arderne also used talismans, though he called them amulets, recommending a specific plant against cancer:

> pick dropwort (sometimes called stonewort) before sunrise on Thursday while saying the Lord's prayer and hang it round the patient's neck… (Jones 174)

Arderne did not necessarily give a reasoning for his use of dropwort or other amulets, calling such a treatment an *experimentum* because he believed its full effects could not be truly explained. Such a statement may seem to betray the credibility of herbal talismans in medicine, and yet Arderne was not the only medical professional to recommend them. Jones points out that the divide between "magical practices" and "scholastic medicine" was not as drastic as could be imagined, reminding readers that plants could have reputations as inexplicable, but effective guards against illness (175). Ultimately, it was the virtues and *dynamidia* of local plants that made them powerful in European medicine, regardless of the chemical effects that may have been observed from their use.

Mandrake in Medicine

The mandrake in particular stands out in European herbalism, as a local plant that was perceived to have considerable medical and social influence. Its appearance was well known in Europe, as given by the herbalist John Gerard in 1633:

> The male Mandrake hath great broad long smooth leaves of a darke greene colour, flat spred upon the ground: among which come up the floures [flowers] of a pale whitish colour, standing every one upon a single small and weake foot-stalke of a whitish greene colour: in their places grow round Apples of a yellowish colour, smooth, soft, and glittering, of a strong smell… The root is long, thicke, whitish, divided many times into two or three parts resembling the legs of a man, with other parts of his body adjoining thereto… (Gerard 351)

Though Gerard himself insisted that shape was an inconsequential quality, much of the European population recognized the mandrake best by its underground root, which accrued its supposed medical powers because its shape suggested many possible applications via sympathetic magic.

The mandrake's uses in medicine have been known since antiquity throughout much of Europe, as well as the Middle East and North Africa. Records of its use exist in ancient texts including the Egyptian Ebers Papyrus, the treatises of Dioscorides in Greece, and the writings of Pliny in Rome (Mann 112-113). All of these works gave strategies for diagnosing illnesses, along with descriptions of the medicinal plants that would aid in treating them. Over and again, the mandrake was listed as an anesthetic and analgesic, able to render a patient unconscious or to numb the pain following an operation (Kobs 11). Its reputed efficacy was such that early Greek and Latin texts claimed that the mere scent of it brought sleep – perhaps these claims influenced the writings of herbalists such as Gerard above, who described the mandrake's fruit as fragrant

despite its complete lack of any actual scent (Simoons 113). The exaggeration of mandrake's olfactory powers became a literal effect in the thirteenth century, upon the invention of the soporific sponge. Well into the seventeenth century, the sponge was a tool used by European surgeons to prepare patients for surgery. When moistened and held to a patient's face, it released potent fumes from a mix of mandrake, poison hemlock, opium, and other plant extracts, typically inducing sleep within a few breaths (Bevan-Jones 102). Extracts of the mandrake could be used outside of surgery as well, to relieve pain and sedate feverish patients. Though the mandrake is native to the Mediterranean region, it was introduced to northern and central Europe early in the Middle Ages, growing successfully due to the warmer climates of the time (Bevan-Jones 100). It had an established role in monastic gardens in this early period, being grown alongside opium and deadly nightshade for use as a painkiller.

However, the mandrake's use in medicine was rooted equally as much in ritual, as the plant was valued for its ability to protect beyond its use in sedatives. Entire roots were prized as talismans, to be worn around the neck against accidents, attacks, or disease. At times the mandrake was envisioned to absorb the ills that would otherwise befall its wearer, as long as it was worn consistently (Simoons 106). This was not a unique phenomenon, as the talismanic use of henbane roots illustrated – however, it was mandrake that would garner cult-like renown in Central Europe. Its talismanic properties joined a preexisting mythical atmosphere in sixteenth-century Germany in particular, where it was readily accepted as a plant of legend (Kobs 16-17). Mandrake roots, once retrieved, were bathed regularly and dressed, then kept in designated caskets or chests (Simoons 125). The root then served as a household's familiar, bringing fortune, health, and safety to its owners as long as it was cared for (Kobs 15-16).

The fall of the Holy Roman Empire obscured much of the knowledge and lore about the mandrake until the surge of the Renaissance around the fourteenth century. By the time of its reemergence in literature, climates had changed for the colder, and the mandrake had become considerably rarer in central Europe. Nevertheless, the mandrake's popularity gained momentum, bolstered by its uses since antiquity and its perceived virtues. The protection offered by the mandrake had a broader scope than its uses as a drug – as a ward against evil of all kinds, the mandrake stood in the European landscape as a plant which, by the harnessing of its virtue and form, shielded humans from harm.

Spices in Medicine

Discussion of medicine between the thirteenth and seventeenth centuries is not complete without focusing on the importance of foreign ingredients to European herbalism. Spices undeniably held much economic and social power in Europe, if not the entire world. Their importance was due to reasons beyond the culinary – in history, spices were luxury items not only because of their rarity and their taste but also because of their many perceived uses in healthcare.

Before the cultural influence of spices can be discussed, it must be acknowledged that spices were largely restricted to the upper classes in Europe, due to their scarcity and price. The types of plants available to the upper and lower classes of medieval and Renaissance Europe is a distinct topic that will be discussed later – for now, it should be noted that the importance of spices will be discussed in reference to the people who could afford them, rather than the population of Europe as a whole.

It is commonly thought that the primary reason spices were so coveted was their use in preserving meats, or in making old meat more palatable. To the European upper class, however, fresh meat was much easier and cheaper to obtain than were spices – Freedman notes that the money needed to treat an old cut of pork with pepper might as well have been put toward buying a live pig (*Out of the East* 3). However, though spices were not used to conceal rot, they did hide other tastes: even nobility was hard-pressed to have fresh meat in the middle of winter, as pastures and the livestock that depended on them were scarce. At the end of autumn, meat was often salted to last until spring, and here spices excelled in relieving diners of painfully salty meals (Turner 109-10). Of course, at all times of the year the use of spices to flavor meats and other foods simply made meals more enjoyable, but the practice of spicing foods also had practical applications related to the importance of the diet to one's health.

Because of the continuing belief in humors, the cooks of upper-class houses were often concerned with serving "balanced" meals that would not upset their consumers' health. Central to this practice was knowledge of the qualities that various foods possessed, which skilled cooks could "temper" to maintain the natural warmth and moisture of the human body (Scully 64). In addition, cooks were expected to have meals ready for those who were already ill. Recipe books of the fourteenth and fifteenth centuries began to include "sickdishes" that aimed to rebalance and bolster the humors of ailing diners (Scully 66). While cooks did use herbs in their dishes to achieve humoral effects, spices were considered to exhibit greater intensities of the base qualities, making them more potent. Spices were invaluable in balancing the humoral effects of each meal – particularly when most meats were considered "cold" and in need of a sauce both literally and humorally hot (Freedman, *Out of the East* 55-56). Ginger was an exemplary ingredient, considered both hot and moist; it resonated strongly with the state of the ideal human

body, leading to its use in many recipes, culinary and medical alike. Overall, the use of spices in food went beyond gustatory pleasures in medieval Europe, as the preparation of meals was a richly developed craft that improved and preserved temperament and health.

Outside of meals, spices were also prescribed to directly combat disease. Black pepper and long pepper were both mentioned in sixteenth-century herbals as treatments for malarial fevers (Adams *et al.* 281). Often, spiced treatments were still delivered in the form of some edible dish: black pepper, cooked with figs and wine, was served as a remedy for asthma since even before the thirteenth century (Freedman, *Out of the East* 63). At other times, the serving of spices with food evolved into the serving of spices as their own medicaments, as demonstrated by the use of the confection box during the fifteenth and sixteenth centuries (Lehner and Lehner 113). The confection, or confit, included sugared pills packed with anise, pepper, caraway, or other popular spices, which were taken as needed to address digestive problems, headaches, and many other minor issues. In this way, spices moved into the realm of upper-class household medicine, becoming accessible as quick-fixes to those who could afford them.

Finally, spices were integral to warding off those diseases that were thought to travel in harmful, stagnant air. A clear example of this concept would be malaria, which bears its name today for the "bad air" historically thought to spread it. Another would be the Black Death of the fourteenth century, the efficacy and devastation of which were explained as a result of "malignant vapors and odors" (Turner 177). Deterring airborne (though not in the modern sense) disease most often involved substances that produced "healthy" air. To that effect, specific remedies and tools developed throughout medieval and Renaissance times that were based on fragrance. Aromatic spices such as myrrh, mace, and sandalwood were recommended by physicians as plague preventatives, to be carried around in portable metal spheres called

pomanders (Freedman, *Out of the East* 64). Of course, the cost of such imports created a hierarchy of fragrances among the people desperate to avoid sickness: spices were considered ideal because their fragrance was long-lived and strong, but lower classes relied on local herbs such as rosemary and sage, which were perceived as weaker due to their common, less exotic status (Turner 178). Notably, sage and rosemary are both quite fragrant, but their placement toward the bottom of the hierarchy indicates a preference for non-European goods that permeates the discussion in this thesis, especially when addressing the European upper class.

The effects of spices in medicine were manifold, ranging from the adjustment of humors to the treatment of specific ailments. The belief that their presence and use also preserved the general wellbeing of their consumers provided an overarching sense of health and security that, when coupled with their rarity and taste, made them highly desirable in European society.

5. The Advantages of Local Herbs over Foreign Spices

There is no question that local plants had but a fraction of the economic weight that spices had. Spices were so applicable in cooking, in drugs, and in the upper-class lifestyle that they were invaluable on the apothecary's shelf, in the wealthy household's pantry, and in the physician's repertoire. The spice trade was therefore a lucrative one, and spices were passed from market to market toward the West at ever increasing prices, so that their final sale in Europe could fetch a thousand times their initial price (Turner 5).

As previously mentioned, the supposed potency of spices created additional reasoning for their effectiveness in medicine. One might therefore expect an overwhelming preference toward spices as medical ingredients, at least for those who could afford them. In truth, physicians did become known to prescribe costlier spices to upper-class patients, when local, common plants

would serve just as well. A common saying instructed physicians that "in return for mere words [of gratitude] we use mountain herbs, but for real money we recommend spices and aromatics" (Freedman, *Out of the East* 69). The apothecaries who supplied ingredients to physicians were also expected to give in to corruption, either by charging high prices or by falsifying their products. Such blatant strategies thrived because they appealed to the conspicuous consumption of spices by upper-class Europeans. For example, in expecting treatments that matched their status, wealthy patients readily accepted prescriptions of dragon's blood over sage, even if the latter came at a tenth of the price, because the cost of dragon's blood was proof of its superior efficacy (Freedman, *Out of the East* 69). Even if the physician or the apothecary was acknowledged as corrupt or greedy, the upper class faithfully believed in the necessity of spices, trusting in their price, their potency, and their exotic nature as signs of their worth.

However, despite the perceived strengths of foreign spices, there were aspects of medicine that were still addressed best by local herbs. Discussion in this section deals with three main subjects: the accessibility of medical ingredients to the European population; the use of herbalism in fertility and love medicine; and the use of local herbs in reproductive health and birth control.

Accessibility

Although spices were more economically lucrative, local plants had a clear advantage over spices in that they were accessible to the entire European population. Here the opinion of "weak" or otherwise inferior ingredients was inconsequential – to the majority of the European population, the ready availability of local herbs was a benefit, albeit not one favored by merchants. Unlike spices, which were so desirable that they were only affordable by the upper class, plants like celery, rue, and juniper were common ingredients for European physicians,

serving as cheap and accessible medicine. The advantage was explicitly clear in the gardens of monasteries, hospitals, and apothecaries, where herbs such as opium, mandrake, deadly nightshade, and hellebore were grown for regular use. Whereas spices, with very few exceptions, failed to grow in the European landscape, local plants could be cultivated in convenient locations. Thus sage, which was common in European gardens, attained status as a cure-all. Similarly, rosemary was praised in a sixteenth-century treatise named *The Virtues of Rosemary*, which described it as "common to every woman's garden" because it was simultaneously decorative and useful (Keiser 181). The treatise also emphasized the "restoration, revival, recovery, and renewal" offered by rosemary, whether it was used to prevent hair loss, deter the plague, or ensure general wellness (Keiser 186).

Plants of the European landscape remained relevant in herbalism because they were available to the majority of the public, regardless of how invested in them the upper class was. Even with the promise of a higher profit at hand, physicians readily admitted the equal powers of local herbs and foreign spices – for the shrewder practitioners, herbs could be overlooked as common substitutes for the more valuable cures, but for the majority they were a welcome aid in the face of disease, without the painful cost associated with foreign spices.

Fertility and Love Magic

Despite discrepancies in cost and accessibility, remedies for love and fertility involved both herbs and spices. Turner notes dryly that "practically everything remotely edible has at some time or another been credited with sexually enhancing powers – and many inedible substances besides" (186). Recipes for fertility often suggested spices such as pepper and cinnamon, citing their heat as helpful against the humoral "cold" of the infertile body (Turner 185). In this vein, ginger was once again the most effective spice, as its heat and moisture best

stimulated the temperament of the human body. Other treatments turned to local plants, including the previously discussed henbane amulet. Nicholas Culpeper, a sixteenth-century herbalist, listed feverfew as especially beneficial, suggesting "a decoction of the flowers in wine, with a little mace or nutmeg" to strengthen the womb (Mann 149).

A prominent figure yet again, the mandrake played a large role in love and fertility due to the shape of its root. Because it resembled a human, it was believed to aid in the reproduction of humans by sympathetic magic (Mann 24). However, its use in such matters involved its fruit as much as its root, as was reflected in some of the names given to the mandrake. In the Old Testament it appeared as *ddym* or *dudaim*, translating roughly to "love-apple" in contexts of fertility and love, and in Christian tradition it was interpreted to be the "Biblical love-apple" used by Leah and Rachel to achieve pregnancy (Simoons 107; Kobs 11). Other names in other languages exist, including the Persian *mihr-gyah* ("herb of love") and the Arabic *tuffāh al-jinn* ("apples of the demon"), indicating that the connection to fertility was based in the entire plant as well as in its fruit alone. Altogether, the mandrake allowed passion, fertility, love, and success in courtship and marriage. Simoons records that pieces of the root were held as charms for "amatory purposes," and mandrake charms were marketed in this way well beyond the seventeenth century (110). The connections between mandrake, fertility, and marriage endured even into the twentieth century, as the plant was reported to still be harvested in modern Romania. Mandrake was added to meals or baths to improve young women's prospects in romance, and for married women it was a persisting charm for sexual passion and successful pregnancy (Simoons 110). In this aspect, it is clear that the mandrake held a cultural significance that did not necessarily hinge on its consumption as a medicine, but did relate to its use as a

talisman. Once again, because of its physical form, it garnered powers according to the magic and myth that prevailed at the time.

Reproductive Health and Birth Control

Other local herbs aside from mandrake featured more than spices did in women's reproductive health, in the forms of drugs, ointments, and other remedies. Women with menstrual complications could resort to herbs known today as emmenagogues: when consumed or applied to the body, they stimulated menstrual flow. A present-day study of Anglo-Saxon reproductive medicine lists the following remedy for delayed menstruation, calling for plants commonly used in such a case:

> … boil in ale *brooklime* and the two *centauries*, give [to her] to drink, and let the woman bathe in a hot bath, and drink the drink in the bath. Have previously prepared a poltice of beer dregs and of *green mugwort* and *wild celery* and of barley meal… Apply to the "kindling limb" [genitals] and to the vulva below when she gets out of the bath, and [have her] drink a cupful of the same drink warm, and wrap up the woman well, and let her be thus poulticed for a long time of the day… (Osborn 154)

Osborn explains the stimulating properties of brooklime and celery, the latter of which is still used in modern settings, and the centaury plants, which have been listed as abortifacients since ancient times. Mugwort was known to facilitate childbirth, though other sources listed it as an abortifacient instead; this discrepancy may have resulted from difficulties in telling mugwort apart from its more potent relative, wormwood.

Though wormwood was discussed earlier as a treatment for malaria and the plague, it was a commonly known abortifacient as well. It was collectively grouped with mugwort and

similar relatives under the group name *Artemisia*, and together they were considered to be at the forefront of emmenagogues and abortifacients.

Often, plants that encouraged menstrual flow could also be used to ease birth, but in other cases they terminated pregnancies and caused abortion instead. Pennyroyal and rue were both emmenagogues, but they were also commonly listed as abortifacients. It is true that many plants referenced in such a way did so simply because they were toxic; pennyroyal, for example, damaged the liver if too much of its oil was ingested. However, European knowledge of pennyroyal, rue, and other plants was detailed enough that they could be used to affect only the reproductive system, as long as the correct dosage was given at the correct time. The ease and frequency of such use varied; pennyroyal could only be administered in precise dosages of tea, while rue was used in baths, drugs, and wine for similar effects (Riddle 52; Riddle 62). Black hellebore was not merely mixed into wine – the sixteenth-century herbalist J.B. Porta wrote, in his *Natural Magick*, that hellebore was to be grafted onto grape vines, so that the subsequent wine would gain the abortifacient properties of the herb (Bevan-Jones 65). Though Porta's suggestion would not have produced any effects, the idea of infusing drinks with contraceptive or abortifacient properties had been common in medicine since ancient times, serving as a basis for his own suggestions.

Remedies also existed for more explicit injuries. The English physician Gilbertus Anglicus published a compendium of medical recipes in the thirteenth century, which was translated and distributed throughout the late medieval period. Its sixth chapter provided explanations and treatments for uterine prolapse, indicating an existing base of knowledge and herbal treatments for women's health (Domínguez-Rodriguez 110). Whatever the suspected cause of the prolapse, the treatments often included hot baths with rosemary, sage, wormwood,

and rue, as well as ointments made with burdock and thyme. Whether these ingredients were crucial in a patient's recovery is not yet clear; however, it is notable that the same ingredients were used throughout other aspects of women's reproductive health.

Though recipes and charms for conception included both spices and local herbs, recipes for *contraception* involved only the latter. These recipes involved many plants already listed, including pennyroyal, rue, and the centauries. Common methods included mixing herbs into wine, making abortifacient poultices, and using talismans. Herbals like Porta's *Natural Magick* contained many recipes that were recorded as contraceptives or abortifacients – though they were not always explicitly stated as such, due to the development of religious and legal stances on abortion in Christian Europe toward the later medieval ages (Riddle 90-91). For example, the previously mentioned German text, *Tractatus*, compiled information on contraceptive and abortifacient plants, but carefully stepped around the exact terminology, instead describing them as menstrual stimulants or remedies for removing dead fetuses. In an even vaguer sense, the *Tractatus* simply recorded pennyroyal and mint as "wonderful for the womb," thus avoiding any explicit reason for censorship or condemnation (Riddle 140).

6. The Reputations of Foreign Spices and Local Herbs

The medical uses of foreign spices and local herbs had profound effects on the reputations of both. Once again, "reputations" in this thesis is used to represent the perceived cultural importance of foreign spices and local herbs to the European population, which was informed by medical uses but also included aspects of religion, society, and literature. Though the focus on herbalism in this thesis allows for a perception of its ingredients as uniformly beneficial, ambiguity in European opinions becomes apparent when broader considerations of

reputation are taken. Thus, the roles of both foreign and local plants in herbalism must be summarized with their broader effects on European culture in mind.

The Perception of Risk in European Spice and Herb Markets

The expense of spices did not depend simply on geographical reasons, for the possession of spices was driven strongly by an intense social want. Though their fragrance could protect against diseases, spiced perfumes were also symbols of opulence for those who could afford them. In fact, there was a convenient intersection between the extravagance and the medical benefits of spices in the wealthy household. If so inclined, upper-class Europeans justified their fondness for spices by pointing to the honest pursuit of one's wellbeing – as spices were so conducive to health, their cost and status came simply as an additional indulgence. With this in mind, upper-class Europeans paid lavish attention to the presentation of spices, using intricate pomanders to hold their perfumes and "spice plates," which were finely made from gold or silver, to serve spiced desserts (Turner 130). The luxurious atmosphere of spices in the wealthy household was supposedly as healthful as it was expensive.

Upper-class Europeans seeking to prove their status could do so by hosting elaborately spiced feasts, whether as part of a larger affair or as a lone-standing event. For example, Freedman reports that the marriage of Duke George of Bavaria and Princess Jadwiga of Poland in 1476 involved the purchase of "386 pounds of pepper, 286 of ginger, 207 of saffron, 205 of cinnamon, 105 of cloves, and a mere 85 pounds of nutmeg," furnishing a series of banquets over a number of days (*Out of the East* 6). In contrast, an account written in 1450 about Prince Henry of Portugal diverges from its initial goal of describing Henry's conquest of a Moroccan city, instead describing a feast hosted by him in extreme detail (Turner 129). Such a focus served the author's goal of portraying Henry as a most gracious and affluent man, as proof of his nobility.

As wealthy customers across Europe sought to prove their status, they exerted an ever greater demand on the spice market, in turn furthering the perceived social value of spices. Thus the spice market behaved in a cyclical manner, as the conspicuous purchase of spices justified their ever-climbing prices.

Even without the pressure of upper-class ostentation to encourage merchants, the spice market thrived on themes of risk, rarity, and reward. At the cusp of the fourteenth century, European exploration spread at last into the lands described by ancient authors such as Pliny of Rome. The East had always been described as a place of wonder, and the mystical role of spices in particular had been magnified to one of fabulous rarity and exoticism (Freedman, "Health" 51). Those who returned to sell spices in Europe told accompanying tales that strengthened preexisting visions of the East as a source of luxurious spices – yet the treasure of spices was well guarded even in its native regions, creating a rarity so excruciating that spice merchants supposedly could not help but ask high prices for their wares. The early spice market in Europe painted its stock as "the attractive and the dangerous… side by side" (Freedman, "Health" 51). Merchants returned with tales of the harrowing journeys they took to find their wares, as well as the risks involved in gathering them. These stories went on to pervade European hearsay and literature, supporting the mystical and hazardous reputation of spices. The purported dangers surrounding the acquisition of Eastern spices may be observed in *The Travels of Sir John Mandeville*, a popular fourteenth-century European novel. When describing the supposed pepper forests of India, the fictional knight Mandeville relates an intricate and dangerous tale:

> In that land, as I said, there are many different kinds of snakes and serpents because of the heat – and also because of the pepper. Some say that at certain times of the year when they go to gather the pepper, they make fires here and there to burn the snakes or make

> them run away. But, with all respect, it is not so. For if they built fires round the pepper, they would burn the pepper and the trees it grows on, or shrivel them so that they would bear no more fruit; that is not true. On the contrary, they anoint their hands and feet and other places of the body with an ointment made of the juice of a fruit they call lemons, mingled with other things, and then they go boldly to get the pepper. The snakes and poisonous serpents run away when they perceive the smell of the ointment; in this way, truly, they get the pepper. (Mandeville 122-123)

Though Mandeville's accounts were often fanciful, the style of his novel fit exactly into the European perception of spices. After presenting the dangers involved, he laid out in detail the strategy necessary to successfully obtain the prized pepper, reflecting the tone in which merchants told stories of their travels and wares. In this way, the intrigue generated by returning merchants allowed the European spice market to thrive (Freedman, "Health" 51-52).

The mandrake was also highly prized within European society, whether whole or in various extracts and pieces. Its economic and social power was based in the reputation built around it as a powerful medicinal ingredient, as discussed previously. Unlike spices, the uses of mandrake in Medieval Europe did not include regular consumption; but, like spices, mandrake's reputation was exaggerated by the apparent risks involved in gathering it. The renowned power of the mandrake reached such heights that the practice of forgery is known to have risen by the sixteenth century. Experienced forgers took roots of bryony, which were more commonly found, and doctored them to resemble mandrake root, by carving them into the proper shape and planting grains in them to grow false hairs (Simoons 104). The practice developed over time into an elaborate profession, becoming so troublesome that multiple publications of the time directly criticized it. Herbalists such as Gerard in England and Bock in Germany berated dishonest

charlatans in their writing, accusing them of coaxing exorbitant sums from unsuspecting customers (Simoons 104).The success of such duplicity was no doubt in part due to the main use of the product as a talisman, which was harder to detect than direct use of the forgery as an ingredient; but the sellers of false mandrake did not simply disguise their wares to succeed. They told specific tales about the roots that they had supposedly gathered, creating an atmosphere of danger about the mandrake that discouraged customers from seeking it out themselves. A prominent element of the supposed risk surrounding the mandrake was the detailed rituals that developed around it over time, one of which Gerard recorded in his seventeenth-century *Herball* with considerable disdain:

> There hath been many ridiculous tales brought up of this plant, whether of old wives, or some runnagate Surgeons or physicke-mongers I know not… that sought to make themselves famous and skilfull above others… They adde further, That it is never or very seldome to be found growing naturally but under a gallows, where the matter that hath fallen from the dead body hath given it the shape of a man… They fable further and affirme, That he who would take up a plant thereof must tie a dog thereunto to pull it up, which will give agreat shreeke at the digging up; otherwise if a man should do it, he should surely die in short space after. Besides many fables of loving matters, too full of scurrilitie to set forth in print, which I forbeare to speak of. (Gerard 351)

Other strategies for gathering mandrake involved drawing circles around it to prevent its escape, reciting certain protective chants, and approaching the plant only on certain days of certain months (Simoons 121), As Gerard's account demonstrates, the legends surrounding the mandrake portrayed it as elusive and deadly to the unprepared. One purpose of these stories was to increase the reputation and perceived skill of the mandrake's gatherers, who supposedly were

the only ones able to survive such a harrowing task. Kobs presents the mythical risk involved with the mandrake as an explanation for the high price at which dishonest charlatans offered it, describing the mandrake harvest as an iterative story (12-13). Forgers boasted of their skill as herbalists to unknowing customers, who came away believing both in the dangers of mishandling the plant and in the justified cost of the root; superstition about the mandrake's deadly intrigue spread, and so the general populace steered clear of it in the wild, returning instead to the "professionals" who scattered the stories in the first place.

The dangers of an uprooted mandrake served to guide European customers toward merchants skilled enough to harvest it, just as the thrilling risks undertaken by merchants to acquire foreign spices reinforced their exotic nature and cost. In a similar manner, there were other local plants in Europe that had gathering rituals associated with them, in order to negate a perceived threat. Hellebore, which could be used as a purgative or an anti-parasitic in addition to its abortifacient properties, was said to cause sluggishness in those harvesting it. The solution, according to ancient sources, was to eat garlic with a serving of wine, which would allow harvesters to work unimpeded (Bevan-Jones 63). Deadly nightshade, previously mentioned for its painkilling effects, was sometimes called *dwale* by herbalists starting in the sixteenth century. Dwale was originally a potent anesthetic drink used to prepare patients for surgery, but by the sixteenth century its name was used to mean deadly nightshade instead (Bevan-Jones 116). The connotations of the original dwale were passed onto deadly nightshade, dissuading passerby from approaching it themselves. Whether or not tales of certain local plants warned explicitly of their effects on unwary passerby, such rumors presented an atmosphere of danger that encouraged European customers to turn to merchants for any plants they needed.

Perceptions of Spices and Herbs in Religious, Social, and Literary Contexts

Spices were expensive due to their faraway origins in the East. However, when considering those origins, a perspective on spices that Freedman calls "the meeting point of sanctity and trade" arises (*Out of the East* 91). As early as the sixth century, the Christian concept of Paradise was one filled with spices (Turner 249). Biblical mention of spices included frankincense and myrrh, both of which are fragrant resins that still carry religious connotations today. Other spices associated with religious practices included cinnamon, cloves, and storax, which could be mixed into "holy chrism," or a holy oil for use in worship (Dalby 137). The belief in spices as proof of Heaven persisted throughout the late medieval and Renaissance periods. Because the Garden of Eden was believed to once sit in Mesopotamia, spices therefore had to originate in the terrestrial Paradise. Additionally, the Nile, the Tigris, and the Euphrates Rivers were believed to carry Eden's spices into the surrounding lands, supposedly explaining why spice plants flourished in Asia despite their failure to grow in Europe (Freedman, *Out of the East* 91). The divine nature of spices was more explicit than the *dynamidia* of all plants – that is, the belief in their origins was so strong that they were perceived to be exceedingly holy, and thus they could connect the earthly church to the spiritual Heaven (Freedman, *Out of the East* 77). Churches therefore were often among the largest customers of spice merchants, not because of medicine but because of worship.

Because of their place in churches, spices could be used as heavenly symbols in European society. In the *Romance of the Rose*, a thirteenth-century French poem, the presence of spices in a garden is a sign that the poet has found himself in a terrestrial paradise:

> In that orchard grew many a spice: cloves, licorice, fresh grains of Paradise, zedoary, anise, cinnamon and every delectable spice that is good to taste after the meal. (Dalby 12)

The heavenly place of spices, however, prompted a rising emphasis on the divide between humanity and its creator, rather than the connection between them. Of course, even within the church, controversy existed: while some texts credited spices with a potent white magic, able to exorcise demons when burned, others contended that it was the aroma of spices that attracted demons in the first place (Turner 256). Overall, however, spices were in themselves holy and good, and thus the use of spices in church services was not hypocritical, as it allowed a spiritual connection to Heaven. By contrast, personal perfumes and heavily spiced foods were unnecessary sins, as they were used for pleasure or to flaunt one's wealth. The sin was compounded when spices were sought out specifically because they were luxurious, regardless of any local plants that could produce the same tastes or effects. Moralists therefore pointed to the consumption of spices as a sign of gluttony, targeting the European upper class because they fell upon spices with particular zeal. One such moralist was Ulrich von Hutten, whose disparaging opinion of spiced diets is related by Freedman below:

> At one time, von Hutten observed, German nourished themselves in a manner both simple and wholesome… food was enlivened by the good, "honest" herbs of the Fatherland, but now everyone has become addicted to luxury… (Freedman 147)

Criticisms of the extravagance of spices were also apparent in the writing of Geoffrey Chaucer, whose *Canterbury Tales* were widely read from the fourteenth century onward. Serving as a character in his own work, Chaucer tells *The Tale of Sir Thopas* by first describing the spices in the surrounding landscape:

> Ther spryngen herbes grete and smale,
> The lycorys [licorice] and Cetewale [zedoary],
> And many a clowe gylofre [clove];

And Notemuge [nutmeg] to putte in Ale,

Wheither it be moyste or stale,

Or for to leye in cofre. (Chaucer 12)

Chaucer's account of the noble knight Thopas continues through several stanzas, until the Host in the *Tales* interrupts him:

'Na moore of this for goddes dignitee,'

Quod oure hoost, 'for though makest me

So wery of thy verray lewednesse

That, also wisly god my soule blesse,

Min eres aken of thy drasty speche...' (Chaucer 17)

That the Host pleads for reprieve shows Chaucer's perceived atmosphere of nobility, which was one of "artificiality and fatiguing luxury" (Freedman, *Out of the East* 156). Thus, despite their spiritual or medical benefits, spices were not exempt from literary criticism, whether they were used to mock the upper class or used as representations of sin.

Freedman also notes that the European discussion of spices as unnecessary luxuries often expressed a longing for a return to local plants, which produced sufficient medicinal and culinary effects without inciting gluttony (*Out of the East* 61). Indeed, as seen in the many herbals and treatises previously discussed, local herbs were consistently noted for their usefulness and accessibility. However, these plants were also prominent sources of poison, bearing a threat not attributed to spices such as pepper or cinnamon. The potential of herbs for harm became a common literary theme: Shakespeare's *Hamlet* has its King murdered by "juice of cursed hebona [henbane]," in stark contrast to the consistent, historical use of henbane root as a protective talisman (Kotsias 847). Just as local plants were extolled for their virtues and healing properties,

they were associated with murder and assassination, and poisoning was held in the worst regard among crimes. The apothecary in Chaucer's *Pardoner's Tale* asks that "God my soule save" when selling a poison, implying that merely holding it was already a grave sin (Ireland 79). Though Chaucer was not specific in what his fictional poison contained, an Italian book on poisons, published in 1589, listed henbane, belladonna, aconite, and hellebore as particularly potent sources (Retief and Cilliers 8). While henbane, belladonna (deadly nightshade), and hellebore have already been discussed as having medically beneficial effects, aconite, or wolfsbane, was most known as an arrow poison (Mann 15). Extracts of aconite were bought from ancient times well into the seventeenth century, for use in hunting wolves and other threatening beasts.

The perception of some local plants as harmful gained particular strength alongside European attention to witchcraft, which developed in detail toward the end of the medieval period. The reputations of local plants warped as a result, as knowledge of herbalism could be used to implicate its users in heresy and witchcraft. Notably, such accusations targeted women more often than they did men. Henbane once again features here, as witches were claimed to summon "spirits and demons" with its narcotic fumes (Lee 366). Reports and confessions of witchcraft commonly mentioned an ointment made from "the fat of infants torn from graves and the juices of parsley and nightshade, as well as of cinquefoil and soot" (Riddle 115). Parsley was cited in texts as an abortifacient, alongside pennyroyal and sage; Riddle also reports that cinquefoil was thought to counter poisonings, perhaps explaining its inclusion in such a recipe.

Accusations of *maleficia*, or black magic, commonly overlapped with those of contraception and infanticide. Guilty witches were defined by their use of antifertility or abortifacient magic with increasing frequency, possibly explaining the numerous contraceptive

plants (and the dead infants) listed in the witch's ointment above. Conversely, women who had any knowledge of herbs for controlling reproduction were suspected of witchcraft. By the late fifteenth century, midwives were expected to obtain licenses to practice, taking oaths that clearly prohibited them from committing "any manner of witchcraft [or] charm" – that is, they were forbidden from interfering with conception or pregnancy (Riddle 133). While the European witch hunts are too broad to discuss within the scope of this thesis, they had dramatic effects on how herbalism and its practitioners were perceived by the public. The opinion of local plants as both healing and harmful gave them an extra dimension alongside their objectively medicinal uses, on par with the way the reputation of spices oscillated between pious reverence and material gluttony.

7. Conclusions

Present-day studies of the spices and herbs discussed in this thesis have yielded supporting evidence for their historical uses in herbalism, if not their continued use in modern medicine. Piperine and gingerol have been identified as the active components of pepper and ginger, respectively, and studies examining the antimicrobial benefits of spiced diets are ongoing. Extracts of both wormwood and rue have proven effective in terminating pregnancies in rats, either by preventing conception or by aborting fetuses (Riddle 48-9). Deadly nightshade is also called belladonna, as it was historically used by women to dilate their eyes for aesthetic purposes (Bevan-Jones 114). Today, the atropine in belladonna is the compound on which optometrist eye dilating drops are based. Whether informative, helpful, or harmful, the effects of plants recorded by medieval and Renaissance herbalists still yield valuable information today.

Mandrake, henbane, and deadly nightshade are classified today as members of the same botanical family, Solanaceae. They produce alkaloids that have been identified as quick-acting

compounds, with effects on the human body that typically agree with historical accounts of their use. Foremost among these effects is anesthesia, as credited in drugs like the Great Rest. However, sufficient doses of hyoscyamine, scopolamine, and other Solanaceae compounds cause a variety of detrimental symptoms, including respiratory depression, loss of muscle control, delirium, coma, and death (Everett and Gabra 445; Kotsias 848). Even outside a medical context, historical texts hold some credibility: the hyoscyamine in henbane, one of the classic ingredients of witchcraft, is confirmed to cause hallucinations, in agreement with accounts of its effects on supposed witches (Riddle 116). The continued study of herbalism may therefore help to explain religious, social, and literary contexts of medieval and Renaissance Europe, creating a more complete perspective of Europe's cultural history.

In conclusion, the European mindset between the thirteenth and seventeenth centuries viewed plants as connections between humans and the divine force that had created them, and thus foreign spices and local plants had predestined roles in health, healing, and daily life. While spices fulfilled spiritual and socially elite positions, local plants maintained relevance as widely accessible remedies, especially in women's health. The idea that spices were economically lucrative and perceived as stronger medicines was no justification to ignore local plants, especially when the cultural reputations of both were considered. Most importantly, the uses of these various plant products served to root them firmly in religious, social, and literary contexts, warranting the continued study of herbalism as a component of European culture.

Appendix: Table of Species

The following is an alphabetical table of common and scientific names for most of the plant species (or their products) discussed in this thesis, with the exception of those given only fleeting mention.

Common name	***Scientific name***
Aconite	*Aconitum napellus* L.
Anise	*Pimpinella anisum* L.
Ash	*Fraxinus* spp.
Barley	*Hordeum vulgare* L.
Black hellebore	*Helleborus niger* L.
Black pepper	*Piper nigrum* L.
Borage	*Borago officinalis* L.
Brooklime	*Veronica beccabunga* L.
Bryony (white)	*Bryonia dioica* Jacq.
Bryony (black)	*Tamus communis* L.
Burdock	*Arctium* spp.
Caraway	*Carum carvi* L.
Castor-oil plant	*Ricinus communis* L.
Celery	*Apium graveolens* L.
Centaury	*Centaurea* spp.
Cinquefoil	*Potentilla reptans* L.
Cinnamon	*Cinnamomum verum* J. Presl
Cloves	*Syzygium aromaticum* (L.) Merill & Perry
Comfrey	*Symphytum officinale* L.
Deadly nightshade	*Atropa belladonna* L.
Dragon's blood	*Draecana* spp.
Dropwort	*Filipendula vulgaris* Moench
Feverfew	*Tanacetum parthenium* (L.) Sch. Bip.
Fleawort	*Plantago* spp.
Frankincense	*Boswellia sacra* Flueck.
Garlic	*Allium sativum* L.
Ginger	*Zingiber officinale* Roscoe
Grains of paradise	*Aframomum melegueta* K. Schum.
Henbane	*Hyoscyamus niger* L.
Juniper	*Juniperus communis* L.
Licorice	*Glycyrrhiza glabra* L.
Lily	*Lilium* spp.
Long Pepper	*Piper longum* L.

Mace	*Myristica fragrans* Houtt

Appendix: Table of Spices Cont.

Common name	***Scientific name***
Mandrake	*Mandragora officinarum* L.
Mint	*Mentha* spp.
Mugwort	*Artemisia vulgaris* L.
Myrrh	*Commiphora myrrha* (Nees) Engl.
Nutmeg	*Myristica fragrans* Houtt
Opium poppy	*Papaver somniferum* L.
Parsley	*Petroselinum crispum* (Mill.) Fuss
Pennyroyal	*Mentha pulegium* L.
Peony	*Paeonia officinalis* L.
Plantain	*Plantago major* L.
Poison hemlock	*Conium maculatum* L.
Purslane	*Portulaca* spp.
Rose	*Rosa* spp.
Rosemary	*Rosmarinus officinalis* L.
Rue	*Ruta graveolens* L.
Saffron	*Crocus sativus* L.
Sage	*Salvia officinalis* L.
Sandalwood	*Santalum* spp.
Storax	*Liquidambar orientalis* L.
Thyme	*Thymus vulgaris* L.
Tragacanth	*Astragalus* spp.
Violet	*Viola* spp.
Wild lettuce	*Lactuca* spp.
Wormwood	*Artemisia absinthium* L.
Zedoary	*Curcuma zedoaria* (Cristm.) Roscoe

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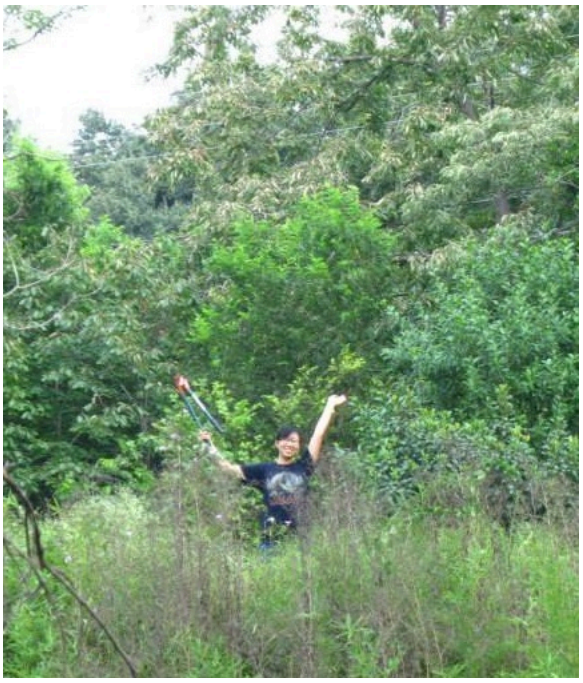

Clarice is the Australian-born child of Chinese parents who met in Japan, who was finally transplanted onto American soil and has been growing there since. She will be graduating from the University of Texas at Austin in December of 2016 with a degree in Plant Biology, as well as an independently constructed Polymathic minor in Ethnobotany. Aside from her studies as an undergraduate, she works at the UT Plant Resources Center as a curatorial assistant, resulting in her interests in systematics and museum curation.

After completing her degree, Clarice intends to enter graduate school in order to study plant systematics. She collects empty glass jars and is, alarmingly, a terrible gardener.