

# “For þe bludy menyson”

## Dysentery in Old and Middle English Medical Texts



MA Thesis Philology

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## INTRODUCTION

Over the course of the Middle Ages, medical knowledge in Europe increased significantly, primarily through Arabic influences. This development can be found in medical manuscripts, both in Latin and in the vernacular. In these manuscripts, medieval physicians discussed a variety of topics, including the disruption of humours (bodily fluids) which caused diseases, astrology to prognosticate survival chances, and urine charts to diagnose problems. Actual treatments of the diseases ranged from pagan charms and advice on diet to expensive herb mixtures containing exotic ingredients. These recipes often stemmed from many centuries before, such as from ancient Greece and Rome, and in the later Middle Ages, also from the Middle East. By studying these medical texts, much can be discovered about medieval medical culture.

Several scholars have compared early and late medieval vernacular medical texts from England. R.A. Buck, for example, concluded that late medieval texts heavily borrowed from older sources, selecting what worked and adding new insights.<sup>1</sup> Another scholar, Charles Burnett, observed that from the early thirteenth century onwards, many scientific books of Arabic origin emerged in Britain.<sup>2</sup> Whether the described medical recipes were ever effective against diseases has been discussed endlessly as well; currently, the *communis opinio* leans towards a positive answer.<sup>3</sup> This thesis will investigate amongst others whether the scholarly statements above also apply to medical writings on the common disease dysentery in medieval England. In short, this research will entail a comparative analysis of the description of dysentery's diagnosis, prognosis and treatment in Old and Middle English medical texts and the advice's relative effectiveness against this disease.

The methodology will consist of a comparative analysis between early and late medieval medical texts, based on close readings of these texts, in the light of relevant scholarship on medieval medicine and modern biochemistry.<sup>4</sup> This research model will be based on Buck's,<sup>5</sup>

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<sup>1</sup> R.A. Buck, "Woman's Milk in Anglo-Saxon and Later Medieval Medical Texts," *Neophilologus* 96, no. 3 (2012): 479.

<sup>2</sup> Charles Burnett, "The Introduction of Scientific Texts into Britain, c. 1100–1250," in *The Cambridge History of the Book in Britain*, ed. Nigel J. Morgan and Rodney M. Thomson, 446–453 (Cambridge: Cambridge University Press, 2008), 451.

<sup>3</sup> Charles Singer, *From Magic to Science: Essays on the Scientific Twilight* (New York: Dover, 1958); cf. Malcolm Laurence Cameron, "Anglo-Saxon Medicine and Magic," *Anglo-Saxon England* 17 (1988): 191–215.

<sup>4</sup> Examples: Faye Marie Getz, *Medicine in the English Middle Ages* (Princeton, NJ: Princeton University Press, 1998); Malcolm Laurence Cameron, *Anglo-Saxon Medicine* (Cambridge: Cambridge University Press, 1993); Nancy Siraisi, *Medieval & Early Renaissance Medicine: an Introduction to Knowledge and Practice* (Chicago: University of Chicago Press, 1990).

<sup>5</sup> Buck, "Woman's Milk," 467–485.

who studied the use of woman's milk in early and late medieval medical texts, taking into account their historical context and the development of medieval medicine. The texts selected for this thesis' comparison are the following:<sup>6</sup> the Anglo-Saxon medical texts *Bald's Leechbook*, *Leechbook III*, *Lacnunga* and *Herbarium of Pseudo-Apuleius* (tenth century),<sup>7</sup> as well as a number of Middle English medical texts, namely *MS Cambridge Corpus 388* (fourteenth century), a translation of Gilbertus Anglicus' *Compendium medicinae*, *MS Hunter 185: A Middle English Remedy Book*, the *Liber de diversis medicinis*, *MS Rylands English 404* and *MS Oxford Rawlinson C814* (fifteenth century).<sup>8</sup>

The first chapter of this thesis will serve as an introduction to medieval medicine, focusing on England, and its changes over the course of the Middle Ages. It will firstly cover medical theory: from the Greek influence on humoral theory in the Early Middle Ages to later Arabic influences. Furthermore, medical practice as well as manuscripts and their sources will be discussed. Lastly, an overview on the case study of this thesis, the disease dysentery, will also be provided. This chapter will build on prior scholarship on medieval medicine by Malcolm Laurence Cameron, Faye Marie Getz, and Nancy Siraisi.<sup>9</sup>

The second chapter will analyse Old and Middle English medical writings on dysentery in the light of two scholarly claims in the field of medieval medicine. Firstly, the common consensus is that later medieval medical texts are more focused on theory, influenced by Arabic medicine imported from Salerno.<sup>10</sup> Secondly, it is thought that vernacular texts often lack a theoretical part and emphasise the practical side of medicine – being popular remedy texts

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<sup>6</sup> I have chosen these texts because they are representative of vernacular English medical texts in their time period.  
<sup>7</sup> *Leechdoms Wortcunning, and Starcraft of Early England Being a Collection of Documents, for the Most Part Never Before Printed Illustrating the History of Science in this Country Before the Norman Conquest*, 3 vols, ed. T.O. Cockayne (London: Rerum Britannicarum Medii Ævi Scriptores 1864–6 (reprint 1965)).

<sup>8</sup> *Three Receptaria from Medieval England: The Languages of Medicine in the Fourteenth Century*, eds. Tony Hunt and Michael Benskin (Oxford: The Society for the Study of Medieval Languages and Literature, 2001), 123–170; *Healing and Society in Medieval England: A Middle English Translation of the Pharmaceutical Writings of Gilbertus Anglicus*, ed. Faye Marie Getz (Madison, Wis.: University of Wisconsin Press, 1991); *A Middle English Medical Remedy Book: Edited from Glasgow University Library MS Hunter 185*, ed. Francisco Alonso Almeida (Heidelberg: Universitätsverlag Winter, 2014); *The "Liber de diversis medicinis" in the Thornton Manuscript (MS Lincoln Cathedral A.5.2)*, ed. Margaret Sinclair Ogden, Early English Text Society, no. 207 (Suffolk: Richard Clay and Company, 1938); "English MS 404," University Library of Manchester, <http://www.library.manchester.ac.uk/inthebigynnyng/manuscript/ms404/>.

<sup>9</sup> Cameron, *Anglo-Saxon Medicine*; Getz, *Medicine in the English Middle Ages*; Siraisi, *Medieval & Early Renaissance Medicine*.

<sup>10</sup> Burnett, "The Introduction of Scientific Texts into Britain," 451; Thomas Glick, et al., *Medieval Science, Technology, and Medicine: An Encyclopedia* (New York: Routledge, 2014), 337–38; J.M. Riddle, "Theory and Practice in Medieval Medicine," *Viator* 5 (1974): 183.

instead of learned treatises.<sup>11</sup> This chapter will thus establish whether these two statements hold up to scrutiny in the context of medieval medical writings about dysentery.

The third chapter will endeavour to disprove the theory that medieval medicine, especially Anglo-Saxon medicine, is based on non-medical knowledge and would therefore be ineffective against illnesses.<sup>12</sup> In the last few decades, several counterarguments have been provided against this theory by biomedical research.<sup>13</sup> This research will be simulated in this thesis by studying the possible effective compounds of the dysentery treatments' ingredients mentioned in scientific literature. This study will show whether, according to current medical research, late medieval dysentery recipes may have been more effective than earlier ones, which would support the notion that medical knowledge has improved throughout the Middle Ages.

This thesis will contribute to existing scholarship on the development of medical knowledge in medieval England, specifically on the treatment of dysentery. There has not yet been compiled an overview of dysentery in medieval England, as this disease appears to have received less attention than, for instance, the plague or leprosy. This thesis will provide a piece of the puzzle by researching how dysentery was treated and how this treatment developed over a longer period of time, as found in English medical texts. Lastly, the third chapter on the effectiveness of dysentery medicine can add to the current study into the efficacy of medieval medicine and can combat old prejudices.

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<sup>11</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 52; Alonso Almeida, *A Middle English Medical Remedy Book*, 34–35.

<sup>12</sup> Singer, *From Magic to Science: Essays on the Scientific Twilight*, 133–167.

<sup>13</sup> Cameron, “Anglo-Saxon Medicine and Magic,” 205.





## CHAPTER 1: INTRODUCTION TO MEDIEVAL MEDICINE<sup>14</sup>

The first chapter of this thesis serves as an introduction to (English) medieval medicine and its changes over the course of the Middle Ages. The chapter firstly covers medical history: from the Greek humoral theory in the Early Middle Ages to later Arabic influences. The case study disease of this thesis, dysentery, is also placed in this historical context. Furthermore, medical manuscripts and practice are discussed. Throughout the chapter, debates about the quality and effectiveness of medieval medicine, Arabic influence, popular versus academic manuscripts, and medical practice are addressed, building on scholarship by amongst others Cameron, Getz, and Siraisi.<sup>15</sup>

### *History of Medicine*

The history of medicine has been long and tumultuous. Within this history, the Middle Ages are often ignored since this time period is frequently associated with stagnation or even degradation of medicine. As will be elucidated below, medieval physicians did continue to work on expanding medical theory and improving practice. However, from our modern perspective, this medieval medical research is considered a continual reinforcement and revival of faulty medicine. Nonetheless, medieval history of medicine is still worthy of study. This section will therefore discuss the birth of medicine in Greece, its influence in the Early Middle Ages in Europe and the impact of Arabic medicine in the Late Middle Ages.

### *Greek-Latin Origins*

The basis of all medicine until the Renaissance lay in ancient Greek medicine. The universe, or macrocosm, according to the Greek philosopher Aristotle (384–22 BC), consisted of four elements: air, fire, earth and water. These elements comprised a combination of two of these four qualities: warm, moist, dry and cold. The mixture of these qualities in the human body, or microcosm, resulted in the four humours, or bodily fluids, and their corresponding temperaments or complexions,<sup>16</sup> as demonstrated in table 1.

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<sup>14</sup> Some parts of this chapter are adapted from my BA thesis: Eveline de Vetten, “You Are What You Eat. Diet as Vehicle for Characterisation in Chaucer’s General Prologue” (BA Thesis, Leiden University, 2016), 7–17.

<sup>15</sup> Cameron, *Anglo-Saxon Medicine*; Getz, *Medicine in the English Middle Ages*; Siraisi, *Medieval & Early Renaissance Medicine*.

<sup>16</sup> Colin Blakemore and Sheila Jennett, “humours,” in *The Oxford Companion to the Body* (Oxford University Press, 2001), <http://www.oxfordreference.com/view/10.1093/acref/9780198524038.001.0001/acref-9780198524038-e-499>.

Element	Qualities	Humour	Complexion	Complexion characteristics	Organ	Season
Air	Warm and moist	Blood	Sanguine	Courageous, hopeful, playful, carefree	Liver	Spring
Fire	Warm and dry	Yellow bile	Choleric	Ambitious, leader-like, restless, easily angered	Gall bladder	Summer
Earth	Cold and dry	Black bile	Melancholic	Despondent, quiet, analytical, serious	Spleen	Autumn
Water	Cold and moist	Phlegm	Phlegmatic	Calm, thoughtful, patient, peaceful	Brain	Winter

Table 1: the qualities and their corresponding elements, organs and humours<sup>17</sup>

Hippocrates (460–370 BC) was a Greek physician and the father of Greek medicine. He believed in rationalist approaches of investigating the body to design medical theories.<sup>18</sup> Hippocrates employed the theory of humours to explain his medical models. According to this humoral theory, the body contained four substances or humours: phlegm, yellow bile, black bile and blood. A balance of humours in the body meant one was healthy. On the contrary, an imbalance of humours, which led to an excess of a certain humour, could cause disease and needed to be prevented or treated.<sup>19</sup> The cause of these imbalances was often sought in external influences, called the six non-naturals or *res non naturales*: air; food and drink; sleep and waking; movement and rest; consumption and excretion; and the emotions.<sup>20</sup> Disturbances of humours could consequently be prevented by a regimen controlling these non-naturals. If the damage was already done, the excess of a humour should either be purged, through, e.g., bloodletting and vomiting, or be balanced through diet or medicine consisting of an opposite quality.<sup>21</sup> The humoral theory meant that disease in Ancient Greece was perceived as a concept or a syndrome of symptoms rather than a concrete entity with a specifically-located cause. Therefore, the focus lay on the patients and their symptoms.<sup>22</sup>

Galen (129–216 AD), a later Greco-Roman physician, built on Hippocrates' rationalist theories, becoming one of the greatest scientists of Antiquity.<sup>23</sup> Galen demonstrated how the

<sup>17</sup> De Vetten, "You Are What You Eat," 10. Table edited from Justin Lewis-Anthony, *Circles of Thorns: Hieronymus Bosch and Being Human* (London: Continuum, 2008), 70.

<sup>18</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 2.

<sup>19</sup> *Tacuinum Sanitatis. Middelleeuwse Gezondheidsleer*, ed. L.C. Arano, trans. F. Oomes (Utrecht: Het Spectrum, 1976), 45.

<sup>20</sup> Marie-Christine Daunay, Jules Janick, and Harry Paris, "Tacuinum Sanitatis: Horticulture and Health in the Late Middle Ages," *ISHS* 49, no. 3 (2009): 2.

<sup>21</sup> Blakemore and Jennett, "humours". Note: e.g., herbs with cold qualities to combat warm humours.

<sup>22</sup> *Western Medical Thought from Antiquity to the Middle Ages*, ed. Mirko D. Grmek, trans. Antony Shugaar (Cambridge, MA: Harvard University Press, 1998), 243, 248.

<sup>23</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 4–5.

humours could become excessive in a body through the non-naturals, especially diet.<sup>24</sup> He also connected the humoral theory to his concept of the four temperaments or complexions (the body's disposition),<sup>25</sup> namely: choleric, phlegmatic, sanguine and melancholic. These complexions originated from the combination of humours in the body – one of them being dominant – which determined a person's character and health. Each human being was born with a dominant complexion that could vary due to disease, seasons and age.<sup>26</sup> In Greek medicine, one's complexion helped to determine which treatment or health regimen would suit best.<sup>27</sup> Therefore, there was a strong emphasis on the individual patient.<sup>28</sup> Personal observation played a large role in Galen's practice, incorporating empiricist elements in his rational works.<sup>29</sup> Additionally, apart from the human body in its entirety, Galen explained that individual organs also possessed specific complexions, which aided in their faculties or functions, such as digestive organs being warm and moist.<sup>30</sup> This idea clarifies why digestion was perceived as cooking, turning food into body products, such as blood.<sup>31</sup> Foodstuffs and herbs similarly possessed certain qualities, which could stabilise an imbalanced human complexion. Galen's oeuvre and his commentaries on Hippocrates became the standard works for doctors first in Greece, then in its neighbouring countries, and finally, partly and in translation, in the Latin West.<sup>32</sup>

There was not a great deal of innovation in medical knowledge in the Roman West, according to the medical historian Vivian Nutton.<sup>33</sup> Roman medicine was based on Greek theories, however, few Greek works were translated into Latin,<sup>34</sup> leaving medical knowledge partial. Other medical texts written were more or less repetitions and compilations of older works that mostly focused on practice.<sup>35</sup> Rome also sprouted medical writers who were not physicians, but compiled Latin encyclopaedias, such as Celsus (second century AD) and Pliny the Elder (23–79 AD).<sup>36</sup> Notwithstanding the lack of innovative writing, medical practitioners

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<sup>24</sup> Mark Grant, *Galen on Food and Diet* (London: Routledge, 2000), 15.

<sup>25</sup> Grmek, *Western Medical Thought*, 129.

<sup>26</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 102.

<sup>27</sup> Glick et al., *Medieval Science, Technology, and Medicine*, 335.

<sup>28</sup> Guenter Risse, "History of Western Medicine from Hippocrates to Germ Theory," in *The Cambridge World History of Human Disease*, ed. Kenneth F. Kiple, 9–19 (Cambridge: Cambridge University Press, 1993), 11.

<sup>29</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 5.

<sup>30</sup> *Ibid.*, 102.

<sup>31</sup> Glick et al., *Medieval Science, Technology, and Medicine*, 338.

<sup>32</sup> Vivian Nutton, David C. Lindberg, and Michael H. Shank, "Early-Medieval Medicine and Natural Science," in *The Cambridge History of Science 2*: 323–40 (Cambridge: Cambridge University Press, 2013), 330.

<sup>33</sup> Nutton et al., "Early-Medieval Medicine and Natural Science," 326–7.

<sup>34</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 6.

<sup>35</sup> Nutton et al., "Early-Medieval Medicine and Natural Science," 326–7.

<sup>36</sup> Grmek, *Western Medical Thought*, 122; Siraisi, *Medieval & Early Renaissance Medicine*, 6.

were still abundant in cities and the army, even though there was no educational institution or licensing system.<sup>37</sup> These physicians continued the Greek debate between Rationalists following Hippocrates and Empiricists who believed in practical medicine, and a small third group of Methodists, who opposed the need for experience.<sup>38</sup>

### *Early Middle Ages*

Early medieval medicine in Europe was based on Greek theories and practices through the heritage of Roman medical texts. Not many Greek-to-Latin translations were available during this time, still, the extant texts provided knowledge of some of the medical theories, especially those by Galen,<sup>39</sup> and of practical matters such as diagnosis, prognosis and treatment. This lack of texts meant that early medieval medicine focused on practice, not on theory or book learning.<sup>40</sup> Medieval medicine consisted both of treatment and of preventive health regimens, the latter already described by Hippocrates in his *A Regimen for Health*.<sup>41</sup> Since diseases were hard to treat by medieval physicians without proper drugs, it was better to maintain the patient's health by regulating the six non-naturals. This regulation was done by tailoring an individual regime regarding the patient's diet, exercise, rest, environmental conditions, and psychological wellbeing to preserve a balanced complexion.<sup>42</sup> Less wealthy, yet still literate patients could follow a general healthy lifestyle prescribed in several medical texts.<sup>43</sup> This emphasis on prevention was confirmed by Rhazes (d. 932), a Persian physician, who stated: "[w]hen you can heal by diet, prescribe no other remedy; and where simple remedies suffice, do not take complicated ones".<sup>44</sup>

If the patient fell ill and preventive measures did not work, he or she would go to a healer. Although, like in Rome, healers were abundant, no official doctor's training or licensing existed in the Early Middle Ages.<sup>45</sup> Medical knowledge would be learned through an apprenticeship or through reading, which meant that the routine of the healer remained fairly similar over the centuries.<sup>46</sup> Depending on the learnedness and experience of the doctor, the complexity of the diagnosis, prognosis and treatment would vary. The physician would first issue a diagnosis

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<sup>37</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 6.

<sup>38</sup> Grmek, *Western Medical Thought*, 110; Siraisi, *Medieval & Early Renaissance Medicine*, 4.

<sup>39</sup> Grmek, *Western Medical Thought*, 200; Siraisi, *Medieval & Early Renaissance Medicine*, 6.

<sup>40</sup> Glick et al., *Medieval Science, Technology, and Medicine*, 337; Riddle, "Theory and Practice," 162.

<sup>41</sup> Grmek, *Western Medical Thought*, 292; Siraisi, *Medieval & Early Renaissance Medicine*, 120.

<sup>42</sup> Grmek, *Western Medical Thought*, 295; Siraisi, *Medieval & Early Renaissance Medicine*, 120.

<sup>43</sup> Glick et al., *Medieval Science, Technology, and Medicine*, 336.

<sup>44</sup> Quoted in James J. Walsh, *Medieval Medicine* (London: A. & C. Black, Ltd, 1920), 35.

<sup>45</sup> Nutton et al., "Early-Medieval Medicine and Natural Science," 338.

<sup>46</sup> Riddle, "Theory and Practice," 159.

based on observation of, for example, the patient's story, symptoms, waste products (indicating the spirit of organs) or, if he was more learned, the pulse (indicating the spirit of the heart).<sup>47</sup> Of these methods, the inspection of urine (urology) was the most popular in medical treatises.<sup>48</sup> The final diagnosis was based on long lists of diseases and their symptoms found in medical texts. Next, the doctor provided a prognosis grounded on prior experiences and mathematical or astrological calculations.<sup>49</sup> These calculations were, of course, quite fallible, but still seen as important, since Hippocrates had stressed the importance of prognosis, which could eliminate some uncertainty.<sup>50</sup> Whether diseases were indeed linked to astrological signs was a debate in both Arabic and European medical societies. A misreading of Hippocrates caused many physicians to develop their practice on the basis of lunar charts, seasons and even climates.<sup>51</sup>

Medieval treatments varied widely, mostly based on the wealth of the client,<sup>52</sup> the availability of ingredients, and the experience and knowledge of the doctor. The treatment itself consisted of diet, surgery or medicine. Diet was both a preventive and curative component, mostly used for slight complexical imbalances. Surgery was mainly employed for disease caused by trauma (e.g., broken bones) or for bloodletting. More severe imbalances of the humours were addressed with medicine.<sup>53</sup> If the client was poor, simple herbal remedies were provided. When the patient had more money to spend, more expensive and complex remedies were prescribed,<sup>54</sup> often multiple ones each addressing an individual symptom. Physicians skilled in Galen's theories also took into account the patient's complexion, making the remedies more difficult to create.<sup>55</sup> These remedies were used to balance the humours, mostly by purging an excessive one<sup>56</sup> or taming the excessive humour with opposite qualities.<sup>57</sup> Tables of drug ingredients with their qualitative degrees were introduced by Arabs in the High Middle Ages,<sup>58</sup> based on Galen's large classifying systems of drugs.<sup>59</sup> However, pharmaceutical writings describing the various qualities of herbs were present in the Early Middle Ages, for instance Dioscorides' *De materia medica* (50–70 AD) was already translated to Latin in the sixth

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<sup>47</sup> Glick et al., *Medieval Science, Technology, and Medicine*, 338.

<sup>48</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 125.

<sup>49</sup> Glick et al., *Medieval Science, Technology, and Medicine*, 338–9.

<sup>50</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 134.

<sup>51</sup> Grmek, *Western Medical Thought*, 158.

<sup>52</sup> Peter E. Pormann and Emilie Savage-Smith, *Medieval Islamic Medicine* (Washington DC: Georgetown University Press, 2007), 140.

<sup>53</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 137.

<sup>54</sup> *Ibid.*, 147.

<sup>55</sup> Grmek, *Western Medical Thought*, 231.

<sup>56</sup> *Ibid.*, 260.

<sup>57</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 102.

<sup>58</sup> Grmek, *Western Medical Thought*, 271.

<sup>59</sup> *Ibid.*, 269.

century<sup>60</sup> and a simplified version of the recipes in Pliny's *Historia naturalis* (77–79 AD) was copied from the fourth century onwards.<sup>61</sup>

In the Early Middle Ages, (Greek) medicine was mostly practiced by clerics.<sup>62</sup> Monasteries were centres of Latinate learning, which included the study and practice of medicine. Contrary to some opinions, Christianity did not cause a decline in medical knowledge, but mixed ancient pagan information with spiritual care.<sup>63</sup> The Christian interference with medicine did lead to the introduction of a supernatural aetiology of disease. To the Greeks, all diseases possessed a natural, somatic cause, while in the Middle Ages, demonic possessions and plagues as punishment of God were prevalent, needing a supernatural or liturgical cure as well.<sup>64</sup> Christian clerics cared for the ill and needy for free as charity,<sup>65</sup> in infirmaries often close to monasteries. Herbs for drugs, also quite exotic ones, were grown in the monastic garden.<sup>66</sup> Furthermore, in monasteries, the Greek focus on hygiene regimes was apparent. Many monastic rules, such as the Benedictine Rule, borrowed several aspects of the *regimen sanitatis*, including the modest diet.<sup>67</sup> Clerics did not solely study medicine, some even wrote their own medical treatises. An example of a medical text compiled in a monastery is the tenth-century *Bald's Leechbook*. This manuscript written in Old English was meant for practical use, although it was based on Latin and Greek sources. Another case is the Old English *Herbarium of Pseudo-Apuleius*,<sup>68</sup> showing the extensive range of medical herbs grown in the monastic garden. These books based on older sources demonstrate that some monasteries possessed a few to many medical manuscripts.<sup>69</sup> Nevertheless, at least very early in the Middle Ages, this number should not be overestimated: “[o]ut of roughly 1000 codices surviving from the ninth century, barely 100 can be classed as medical. Collections of recipes, antidotes, and

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<sup>60</sup> Riddle, “Theory and Practice,” 162.

<sup>61</sup> Nutton et al., “Early-Medieval Medicine and Natural Science,” 334–5.

<sup>62</sup> H.H. Lauer, “Klostermedizin,” in *Lexikon des Mittelalters*, 10 vols (Stuttgart: Metzler, 1977–1999), vol. 6, cols 453–454, in *Brepolis Medieval Encyclopaedias - Lexikon des Mittelalters Online*, <http://apps.brepolis.net.ezproxy.leidenuniv.nl:2048/lexiema/test/Default2.aspx>

<sup>63</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 7–8; Katharine Park, “Medicine and Society in Medieval Europe, 500–1500,” in *Medicine in Society: Historical Essays*, ed. Andrew Wear, 59–90 (Cambridge: Cambridge University Press, 1992), 64.

<sup>64</sup> Nutton et al., “Early-Medieval Medicine and Natural Science,” 323.

<sup>65</sup> Grmek, *Western Medical Thought*, 196; Siraisi, *Medieval & Early Renaissance Medicine*, 9.

<sup>66</sup> L.E. Voigts, “Anglo-Saxon Plant Remedies and the Anglo-Saxons,” *Isis* 70 (1979): 266.

<sup>67</sup> Grmek, *Western Medical Thought*, 296; Siraisi, *Medieval & Early Renaissance Medicine*, 9.

<sup>68</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 10.

<sup>69</sup> Risse, “From Hippocrates to Germ Theory,” 12.

agglomerations of handy rules predominate.”<sup>70</sup> During the Carolingian Reform (from 800 on) more manuscripts were copied, thus also medical ones, which ended up in monastic libraries.<sup>71</sup>

Anglo-Saxon medicine, practiced in England before the eleventh century, has in the past often been characterised as ineffectual and unlearned,<sup>72</sup> since Anglo-Saxons mixed classical Greek medical theories with popular, native medicine, often consisting of magic-like rituals and Christian liturgical prayers.<sup>73</sup> Notwithstanding, in the few texts left, practical and theoretical knowledge can be distinguished, such as the use of herbs, humoral theory and bloodletting, demonstrating some degree of medical knowledge of the Anglo-Saxons, probably transmitted orally and learned through trial and error.<sup>74</sup> Most extant evidence originates from monasteries, but there must have been many illiterate healers or secular practically-trained doctors as well.<sup>75</sup> Anglo-Saxon medical texts will be further discussed in the section ‘Manuscripts’ below. Additionally, the changing view from Anglo-Saxon medicine as useless and magical to quite efficient and learned is examined more in chapter three.

### *Arabic Influences*

By the eleventh century, the Saracen medical scholar Constantine the African (d. 1087) arrived in Salerno, *the* medical centre of Italy from the mid-900s onwards. Here, knowledge of Greek was excellent,<sup>76</sup> but until then, the focus lay on practice.<sup>77</sup> Constantine translated several Arabic medical texts, such as Haly Abbas’ *Pantegni* (tenth century), which clarified and improved upon existing (Greek) medical knowledge in Europe.<sup>78</sup> These translations caused a theoretical turn in Salerno, which resulted in more translations from Greek and Arabic and thus a deeper understanding of ancient medical theories. This Salernitan movement in turn promoted the study of medical theory in other European medical institutions and later universities.<sup>79</sup> Constantine’s translations therefore caused a revival of medical learning in Europe.

The medical historian Grmek emphasises that Arabic medicine was not as innovative as would seem from its influence in Europe, because it was based on the same Galenic theories

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<sup>70</sup> Nutton et al., “Early-Medieval Medicine and Natural Science,” 336.

<sup>71</sup> *Ibid.*, 337.

<sup>72</sup> Singer, *From Magic to Science: Essays on the Scientific Twilight*, 133–167.

<sup>73</sup> Buck, “Woman’s Milk,” 476.

<sup>74</sup> Riddle, “Theory and Practice,” 165.

<sup>75</sup> Park, “Medicine and Society in Medieval Europe,” 65.

<sup>76</sup> Grmek, *Western Medical Thought*, 202.

<sup>77</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 13.

<sup>78</sup> Grmek, *Western Medical Thought*, 203; Siraisi, *Medieval & Early Renaissance Medicine*, 14–15.

<sup>79</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 15.

about humours as earlier European medicine.<sup>80</sup> Indeed, medical historian Siraisi agrees that the revival of medical learning in Europe depended more on an increase in medical literature and a new focus on theory and philosophy, than on Arabic innovations.<sup>81</sup> Be that as it may, the Arabs did achieve some advances the Europeans did not know of before Constantine. For one, Arabic scholars enjoyed a larger access to Greek texts (e.g., from Galen and Dioscorides), which they translated into Arabic from the mid-eighth to the tenth century.<sup>82</sup> In this period, they also invented more mathematical systems for Greek theoretical models in order to obtain more precision,<sup>83</sup> such as the four degrees of qualities in foodstuffs.<sup>84</sup> Furthermore, Arabic physicians maintained a greater interest in the connection between philosophy and medicine, based on Aristotle's writings.<sup>85</sup> Nonetheless, similar to Europe, their religious system halted medical discoveries, especially empirical ones. For instance, the spread of diseases by contagion was denied by the Prophet Muhammed in the Quran and was therefore rejected by physicians.<sup>86</sup> Similarly, the dissection of humans was forbidden in the Middle East as well as in Europe, thereby forcing physicians to depend on Galen's faulty theories on anatomy and circulatory systems<sup>87</sup> – although Arabic doctors did have some early breakthroughs in these fields.<sup>88</sup> The Arabic hospital was also a religious institution, but it is assumed to have been superior to and more extensive than the European infirmary.<sup>89</sup>

The period from 1050 to 1225 is called the twelfth-century Renaissance, which is characterised by rapid urbanisation and economic growth – thereby increasing the demand for medical services and literature.<sup>90</sup> Medical innovation was further motivated by an increase in medical literature from Salerno. Later in the twelfth century, the Spanish Toledo became another port for new Arabic medicine. Here, Avicenna's medical encyclopaedia *Canon of Medicine* (eleventh century) and Rhazes' medical textbooks (ninth/tenth century) were translated, all works further systemising Greek humoral theory.<sup>91</sup> The early medieval focus on healing and treatment thus changed to a later medieval focus on theory and education. In 1130,

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<sup>80</sup> Grmek, *Western Medical Thought*, 162.

<sup>81</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 15.

<sup>82</sup> Grmek, *Western Medical Thought*, 142–147; Pormann and Savage-Smith, *Medieval Islamic Medicine*, 144.

<sup>83</sup> Blakemore and Jennett, "Islamic medicine," in *The Oxford Companion to the Body*; Grmek, *Western Medical Thought*, 158.

<sup>84</sup> See: Arano, *Tacuinum Sanitatis*.

<sup>85</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 12.

<sup>86</sup> Grmek, *Western Medical Thought*, 159.

<sup>87</sup> *Ibid.*, 164.

<sup>88</sup> Pormann and Savage-Smith, *Medieval Islamic Medicine*, 156.

<sup>89</sup> *Ibid.*, 157.

<sup>90</sup> Park, "Medicine and Society in Medieval Europe," 75; Siraisi, *Medieval & Early Renaissance Medicine*, 13.

<sup>91</sup> Grmek, *Western Medical Thought*, 297; Risse, "From Hippocrates to Germ Theory," 13.



the emphasis on secular theory became so great that some clergy forbade the study and practice of medicine, at least outside the monastery.<sup>92</sup> Christian healing was still practiced after this decision, but the main centres of medical learning became the universities.

After the twelfth century, a rise of universities with a medical faculty was visible, to the example of Salerno's medical school founded in 985, and stimulated by the new medical texts available in Latin.<sup>93</sup> The main medical universities until the fourteenth century were those of Bologna, Paris, and Montpellier.<sup>94</sup> The focus lay on book learning out of Latin texts translated from Greek and Arabic – a curriculum formed around a Salernitan treatise collection called the *Articella*<sup>95</sup> – thus emphasising mostly Galenic theory and natural philosophy.<sup>96</sup> Medicine was therefore leaning towards a science, not a practical art as it was thought of before.<sup>97</sup> The distinction between practice (art) and theory (science) advocated by Aristotle was revived again.<sup>98</sup> This promotion from art to science provided graduates in medicine with a high status.<sup>99</sup> The theoretical science of medicine was divided in three parts: physiology and anatomy, the doctrine of the healthy naturals or *res naturales*; pathology, the study of diseases or the *res contra naturam*; and treatment, divided in regimens for the *res non naturales*, pharmacology and surgery.<sup>100</sup> Additionally, medical students were taught logic, astronomy and philosophy,<sup>101</sup> and worked some practical cases for experience.<sup>102</sup>

The first university in England to teach medicine was Oxford University in the fourteenth century, followed by Cambridge in the fifteenth century – quite late in comparison to the Continent.<sup>103</sup> Even after their founding, the Oxford and Cambridge medical faculties remained

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<sup>92</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 13.

<sup>93</sup> *Ibid.*, 49.

<sup>94</sup> Grmek, *Western Medical Thought*, 211–2. Note: Salerno was not a university and lost prestige after the thirteenth century.

<sup>95</sup> “Medizin,” in *Lexikon des Mittelalters*, 10 vols (Stuttgart: Metzler, 1977–1999), vol. 6, cols 453–454, in *Brepolis Medieval Encyclopaedias - Lexikon des Mittelalters Online*.

Note: “The collection as first compiled in the twelfth century (later other texts were added) consisted of two Hippocratic treatises, the Aphorisms and the Prognostics; a brief Galenic treatise known under various titles (*Ars medica*, *Ars parva*, *Tegni*; an Arabic introduction to Galenic medicine known to the Latins as the *Isagoge* of Johannitius; and short tracts on the main diagnostic tools of the medieval physician, namely pulse and urine,” in Siraisi, *Medieval & Early Renaissance Medicine*, 58.

<sup>96</sup> Grmek, *Western Medical Thought*, 213; Siraisi, *Medieval & Early Renaissance Medicine*, 50.

<sup>97</sup> Grmek, *Western Medical Thought*, 198, 207.

<sup>98</sup> Riddle, “Theory and Practice,” 161.

<sup>99</sup> *Ibid.*, 180; Risse, “From Hippocrates to Germ Theory,” 13.

<sup>100</sup> “Medizin,” in *Lexikon des Mittelalters*.

<sup>101</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 65.

<sup>102</sup> *Ibid.*, 73.

<sup>103</sup> Peter Murray Jones, “University Books and the Sciences, c.1250–1400,” in *The Cambridge History of the Book in Britain*, ed. Nigel J. Morgan and Rodney M. Thomson, 453–462 (Cambridge: Cambridge University Press, 2008), 457.

small and had only local impact,<sup>104</sup> which meant that probably many Englishmen travelled to the mainland to study medicine, before and after the fourteenth century. For example, Gilbertus Anglicus (c.1180–c.1250), a famous English medical author, has been thought to have studied at both Montpellier and Salerno.<sup>105</sup>

Those not studying at university or in a monastery learned medicine through private study or an apprenticeship, as was most likely the secular standard before universities.<sup>106</sup> The non-university students of medicine formed a group of physicians combining Latin and the vernacular, as well as having a greater focus on practice.<sup>107</sup> It is debatable whether these practitioners gained any advantage from the new theoretical turn in medicine. Scholars have even argued that Arabic theories which focused on quantification (adding degrees to the qualities of humours and plants) were impossible to incorporate in practice and that the newly-translated theoretical works were too extensive for anyone to learn.<sup>108</sup> The division in theory and practice, and therefore of doctors, continued onto the end of the Middle Ages.<sup>109</sup> This dissection is also visible in manuscripts, which can be roughly divided into texts on medicine as a university subject and practical user manuals,<sup>110</sup> as well as in the battle “over training and licensing, which had two main centres, universities and trade companies or guilds.”<sup>111</sup> Contemporaries similarly witnessed the growing importance of theory. In 1265, the English scholar Roger Bacon complained about bad doctors who excessively focused on theory,<sup>112</sup> showing not everyone was content with the new learnedness of medicine.

### *Later Middle Ages*

In the fourteenth century, the hierarchy of medical practitioners became more divided as well as more structured. Qualifications were more common, such as a university education, selective guild membership or public licence to practice,<sup>113</sup> which ensured a good level of knowledge

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<sup>104</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 56.

<sup>105</sup> A. González-Hernández and M.V. Domínguez-Rodríguez, “Migraine in Gilbertus Anglicus’ *Compendium medicinae*. The Cases of MS Sloane 3486 and Wellcome MS 537,” *Journal of the History of the Neurosciences* 17, no. 2 (2008): 148.

<sup>106</sup> Riddle, “Theory and Practice,” 159; Rossell Hope Robbins, “Medical Manuscripts in Middle English,” *Speculum* 45, no. 3 (1970): 408; Siraisi, *Medieval & Early Renaissance Medicine*, 50.

<sup>107</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 50–52.

<sup>108</sup> Riddle, “Theory and Practice,” 159, 172; Siraisi, *Medieval & Early Renaissance Medicine*, 71.

<sup>109</sup> Grmek, *Western Medical Thought*, 201; Park, “Medicine and Society in Medieval Europe,” 70.

<sup>110</sup> Peter Murray Jones, “Medicine and Science,” in *The Cambridge History of the Book in Britain*, ed. Lotte Hellinga and J. B. Trapp, vol. 3: 433–48 (Cambridge: Cambridge University Press, 1999), 433.

<sup>111</sup> Park, “Medicine and Society in Medieval Europe,” 78.

<sup>112</sup> Grmek, *Western Medical Thought*, 222.

<sup>113</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 19.

and reliability for medical practitioners, yet many must have still practiced unlicensed.<sup>114</sup> Physicians who could read Latin and had studied at university ranked the highest in the medical hierarchy, and were thus the most expensive and most scarce. To illustrate, even in the fifteenth century, there were only around sixty university-trained physicians in England.<sup>115</sup> The lower group of lay vernacular practitioners consisted of non-university or secular physicians; surgeons, who often worked as barbers as well and organised themselves in guilds;<sup>116</sup> and the lowest-ranking, often illiterate, local herbalists.<sup>117</sup> A growing knowledge and literacy in these ‘lower’ doctors can be found in medical manuscripts, which were increasingly translated from Latin to the vernacular language and adapted for practical use.<sup>118</sup> Vernacular works mostly consisted of compendia of recipes or manuals on prognostication or surgery, although also some later medieval theoretical works are found with a new vernacular technical vocabulary.<sup>119</sup>

Furthermore, the fourteenth century experienced a renewed interest in medical practice, because of newly-permitted dissection of humans, a revived focus on observation and the growing need for doctors in the city because of epidemics. Consequently, the division between theory and practice became less evident at universities as well.<sup>120</sup> This focus on practice was necessary, as the pandemic Plague in 1348 and 1349 became a European medical crisis. More sanitary measures were introduced, as well as a myriad of treatments, even though the cause of the disease remained uncertain to medieval doctors.<sup>121</sup> The inability to cure Plague victims may have sparked a distrust of doctors, for instance discernible in Chaucer’s “Doctour of Phisik” [Doctor of Medicine], who was more concerned with gold than his patients.<sup>122</sup> However, as it had been for centuries, the demand for medical professionals did not falter.<sup>123</sup>

At the end of the Middle Ages, medicine was practiced mostly the same as it was at the beginning, while its texts, theory, education, and licensing had increased greatly. Nevertheless, medicine was still based on the Greek humoral theory, which later proved to be faulty. To speak of an improvement in medicine over the Middle Ages from a modern perspective would

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<sup>114</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 20.

<sup>115</sup> Robbins, “Medical Manuscripts in Middle English,” 408.

<sup>116</sup> Park, “Medicine and Society in Medieval Europe,” 80.

<sup>117</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 20.

<sup>118</sup> Jones, “Medicine and Science,” 433–34; Park, “Medicine and Society in Medieval Europe,” 82; Siraisi, *Medieval & Early Renaissance Medicine*, 20, 52.

<sup>119</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 53.

<sup>120</sup> Grmek, *Western Medical Thought*, 223–30; Siraisi, *Medieval & Early Renaissance Medicine*, 152.

<sup>121</sup> Risse, “From Hippocrates to Germ Theory,” 14.

<sup>122</sup> Geoffrey Chaucer, “General Prologue,” in *The Canterbury Tales. The Riverside Chaucer*, 3rd ed., ed. Larry D. Benson (Boston: Houghton Mifflin Company, 2008), 1.411–444.

<sup>123</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 43.

therefore be an anachronism; nonetheless, medieval medicine cannot be said to have been static and unlearned.

### *Dysentery*

This thesis focuses on a case study of the common disease dysentery in the Middle Ages. The second chapter will analyse whether and how the theory and treatment of dysentery differs in early and late medieval medical texts. First, this chapter provides a general overview of the disease. In modern medicine, dysentery is described as a type of gastroenteritis (gut inflammation) that results in bloody diarrhoea and various other symptoms including fever and abdominal pain. The disease can be caused by an infection with bacteria, viruses, parasites, or protozoa (single-celled organisms).<sup>124</sup> Today, it can be treated with oral rehydration therapy or antibiotics, although the disease is still lethal in third-world countries.

The etymology of the word *dysentery* stems from the late fourteenth-century English *dissenterie*, which in turn is derived from the Old French *disentere* (thirteenth century), Latin *dysenteria*, and Greek *dysenteria*, coined by Hippocrates, from *dys-* ‘bad, abnormal, difficult’ and *entera* ‘intestines, bowels’.<sup>125</sup> In other words, the disease thus must have occurred already in the time of the Greeks. In Anglo-Norman medical texts, dysentery is also often called *menison* or a spelling variant on this, derived from the Old French *menaison* (eleventh century).<sup>126</sup> In the *Old English Dictionary*, dysentery is called *utsihtadl*, stemming from the word *adl*, meaning disease, and the word *utsiht(e)*, which is defined as diarrhoea, but literally means ‘out flow’. Another Old English word for dysentery is *utwærc*, which means to out pain.<sup>127</sup> The Old English names for dysentery are different than the Middle English ones because the former are of Germanic origin instead of Latin or French. Because of the fairly regular naming and description of the disease, it can be traced through medieval medical texts.

As mentioned above, dysentery was caused by bacteria or viruses, which were often found in dirty drinking water. Medieval people had no idea their water was the culprit, since people continued throwing their waste products in the water. Medical theory in the Middle Ages was more concerned with bad air, one of the non-naturals.<sup>128</sup> “[t]he idea that the environmental air

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<sup>124</sup> *A Dictionary of Nursing*, ed. Martin, Elizabeth A. and Tanya A. McFerran (Oxford: Oxford University Press, 2014), s.v. “dysentery,”

<http://www.oxfordreference.com/view/10.1093/acref/9780199666379.001.0001/acref-9780199666379-e-2605>.

<sup>125</sup> *Oxford English Dictionary Online*, s.v. “dysentery,” <http://www.oed.com/view/Entry/58878>.

<sup>126</sup> *Ibid.*, s.v. “menison,” <http://www.oed.com/view/Entry/116457>

<sup>127</sup> *Old English Dictionary*, s.v. “utwærc, utsiht,” <http://old-engli.sh/dictionary.php>.

<sup>128</sup> Park, “Medicine and Society in Medieval Europe,” 86.

itself could become infected [...] served as a useful explanation of epidemic illness that affected many people at the same time and place.”<sup>129</sup> This bad air theory also explained why people near the patient became ill.<sup>130</sup>

Although people drank more beer, wine or cider than untreated water, dysentery was still a common disease in the Middle Ages: “the large number of surviving remedies concerned with intestinal and digestive problems suggests that enteric [i.e. intestinal] diseases were common”.<sup>131</sup> In addition to unhealthy water; working conditions, housing, hygiene and diet were poorly enough to cause disease.<sup>132</sup> From the thirteenth century onwards, there was a bigger concern with communal health care and hygiene, which led to cities ordering cleaner streets.<sup>133</sup> This concern was revived by the 1348–9 Plague, which also introduced new quarantine measures.<sup>134</sup> Since dysentery was not as contagious as the Plague, these patients were probably not quarantined, but they may have benefitted from a more hygienic city.

The medieval physician Gilbertus Anglicus described dysentery as “a flux of the bowels with a sanguinolent discharge and excoriation of the intestines,”<sup>135</sup> demonstrating that medieval doctors could adequately recognise and describe dysentery. As stated above, a large number of dysentery remedies survived. Social historian Jean-Noël Biraben studied the mention of diseases in more than a thousand high medieval manuscripts from Western Europe. Twelve percent of those entries mentioned digestive diseases without infection and four percent with infection. Of those cases combined, fifteen percent discussed diarrhoea, which could be linked to dysentery,<sup>136</sup> demonstrating that medical writers were indeed concerned with dysentery. Influential ancient texts in the Middle Ages also mentioned infective digestive diseases, including dysentery, such as Hippocrates’ *Epidemiae* (six percent of all entries) and *Aphorismi* (fifteen percent).<sup>137</sup> Further information about diseases and epidemics can be found in chronicles, saint’s lives, records, and through archaeology, although these options will not be examined in the coming chapters.

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<sup>129</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 123.

<sup>130</sup> *Ibid.*, 129.

<sup>131</sup> Carole Rawcliffe, “Health and Disease,” in *A Social History of England, 900–1200*, ed. Julia Crick and Elisabeth van Houts, 66–75 (Cambridge: Cambridge University Press, 2011), 71.

<sup>132</sup> Park, “Medicine and Society in Medieval Europe,” 61.

<sup>133</sup> *Ibid.*, 83.

<sup>134</sup> *Ibid.*, 87.

<sup>135</sup> Henry E. Handerson, *Gilbertus Anglicus. Medicine of the Thirteenth Century* (Cleveland: The Cleveland Medical Library Association, 1918): 38, *Gutenberg*.

<sup>136</sup> Jean-Noël Biraben, “Diseases in Europe: Equilibrium and Breakdown of Pathocenosis,” in Grmek, *Western Medical Thought*, 346.

<sup>137</sup> Grmek, *Western Medical Thought*, 323–3.

Many regional outbreaks of dysentery were caused or stimulated by military activity,<sup>138</sup> because of the battlefields' bad conditions and mass housing, as well as the soldiers' declined health and immunity. Around the battlefields, civilians may have caught dysentery too, caused by their similarly-declined living conditions. Several famous Englishmen's deaths of dysentery indeed happened during wars, which shows that high status did not prevent contracting dysentery on the battlefield. In 1216, King John of England died in East Anglia after retreating from the French invasion, during which he contracted dysentery. Similarly, in 1307, King Edward I 'Longshanks' deceased on a campaign to Scotland after a long bout of dysentery. Lastly, King Henry V of England is thought to have perished from dysentery in 1422 after a siege in Meaux, France.<sup>139</sup> That many would rather have died of wounds than dysentery is described by Siward, Earl of Northumbria, who died of dysentery in 1055. He laments: "[h]ow shameful it is that I, who could not die in so many battles, should have been saved for the ignominious death of a cow! [lying down instead of standing]"<sup>140</sup>

Death by dysentery on the battlefield did not only happen in Europe, but also during crusades in the Middle East: "[o]ne chronic example, recorded in John of Joinville's *The Life of Saint Louis*, is that the leader of the seventh crusade, King Louis IX of France, had such persistent diarrhoea that he cut away part of his breeches to simplify evacuation."<sup>141</sup> Archaeological research around Middle Eastern battlefields has also demonstrated how the disease could have spread: not only direct contact or dirty drinking water caused dysentery, parasitic infection probably also took place in dirty latrines.<sup>142</sup> These findings reveal the worldwide range of the disease.

Medieval medical texts differentiated on the cause of dysentery. The most common explanation was the one used for all internal diseases: an imbalance of a person's complexion,<sup>143</sup> caused by non-naturals, such as air; the influence of planets (astrology); and God's will.<sup>144</sup> Some sections on dysentery were more specific. Isidore of Seville (d. 636)

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<sup>138</sup> Rawcliffe, "Health and Disease," 70.

<sup>139</sup> William H. York, *Health and Wellness in Antiquity Through the Middle Ages* (Westport: ABC-CLIO, LLC, 2012), 200–201.

<sup>140</sup> Henry of Huntingdon, *Historia Anglorum*, ed. and trans. D. E. Greenway (Oxford: Clarendon Press, 1996): VI.24. Idea from: Thijs Porck, "An Anglo-Saxon Anecdote: Earl Siward and the Proper Ways to Die," *The Dutch Anglo-Saxonist*, last modified May 16, 2016, <https://dutchanglosaxonist.com/2016/05/16/an-anglo-saxon-anecdote-earl-siward-and-the-proper-ways-to-die/>.

<sup>141</sup> Bernard Dixon, "Crusaders' Dysentery," *The Lancet Infectious Diseases* 8, no. 9 (2008): 530. Note: King Louis IX actually died of dysentery in 1270 on the Eighth Crusade.

<sup>142</sup> *Ibid.*, 530.

<sup>143</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 120.

<sup>144</sup> *Ibid.*, 129.

mentioned in his *Etymologies*, under ‘Chronic diseases’, that dysentery was an ulceration of the intestines, following a flux.<sup>145</sup> Michele Savonarola (1385–c.1466) copied ancient sources on lientery, the indigestion of food causing diarrhoea, arguing that this disease could lead to dysentery.<sup>146</sup> Both authors thus stated that dysentery followed a bout of diarrhoea. The *Trotula*, a twelfth-century Salernitan gynaecology tract, specified that dysentery was the effect of the absence of menstruation in women<sup>147</sup> – a wholly different explanation than the previous two. What connects these physicians is that they all looked inwards for causes of dysentery. On the contrary, Bernard Gordon (d. 1320) in the fourteenth century was the first to link corrupt air to dysentery. As explained above, air was part of the non-naturals, hence able to harm a person’s complexion. Additionally, in the fourteenth century, Valesco de Tarenta (d. 1426) related dysentery to epidemic pestilence and weather, stating contagion was the cause of disease occurring in the same place to all ages.<sup>148</sup> Medical theory hence started approaching the real cause of dysentery at the end of the Middle Ages. In turn, De Villanova (1240–1311) described a case where calcified water gave a man dysentery and drinking other water healed him.<sup>149</sup> This case displays the importance of medical experience next to theory to treat patients. More on this disease in the next chapter, where the theory and treatment of dysentery in medieval English texts will be discussed.

### *Medical Manuscripts in Medieval England*

Most information we still possess on medieval medicine is found in extant medical manuscripts. There are several types of medieval medical manuscripts, but they often describe diseases from head to toe, and within these sections, causes, symptoms, prognoses and treatments are described. This lay-out already occurred in ancient Egyptian medical texts, as well as in Greek ones.<sup>150</sup> This section focuses on English medieval medical manuscripts. The general view of scholars seems to be that before 1100 most medical manuscripts consisted of basic summaries of medical theory, guides on prognosis and diagnosis, and well-organised recipe lists – all suited to practice. After that, more theoretical works, as well as more vernacular works emerged.

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<sup>145</sup> Faith Wallis, *Medieval Medicine: A Reader* (Toronto: University of Toronto Press, Higher Education Division, 2010), 9.

<sup>146</sup> Luke DeMaitre, *Medieval Medicine: The Art of Healing, from Head to Toe* (Santa Barbara: ABC-CLIO, 2013), 260.

<sup>147</sup> Wallis, *Medieval Medicine*, 187.

<sup>148</sup> DeMaitre, *Medieval Medicine*, 264.

<sup>149</sup> Wallis, *Medieval Medicine*, 220.

<sup>150</sup> Grmek, *Western Medical Thought*, 55.

The oldest extant Anglo-Saxon medical texts are thought to stem from the tenth century in their manuscript versions.<sup>151</sup> From which time period the content of the texts stems, is hard to tell. However, *Bald's Leechbook* contains certain recipes related to the ninth-century King Alfred the Great, meaning that specific part could not have been written before his birth in 848.<sup>152</sup> The major medical Old English texts are the tenth- or eleventh-century *Bald's Leechbook*, *Leechbook III*, the *Lacnunga* and the *Herbarium of Pseudo-Apuleius*. The term 'leechbook' derives from the Old English *laece*, meaning healer – a leechbook was thus a physician's manual.<sup>153</sup> These texts all have distant common sources; they are considered compilations of older remedies,<sup>154</sup> either derived from popular or classical medicine. They do not seem to be direct translations, but rather adaptations of older classical sources adding native elements,<sup>155</sup> such as popular and folkloric healing practices, and Christian liturgical prayers.<sup>156</sup> Literary historian Linda Voigts argues that the adaptation of classical sources in Old English leechbooks is textual evidence for practical use of these manuscripts.<sup>157</sup> The texts indeed seem to contain little explicit medical theory, although there is some theoretical understanding visible underlying the practical part,<sup>158</sup> such as the references to humours in *Bald's Leechbook*. The assumed practical use is reinforced by the fact that English vernacular medicine of the tenth to the twelfth century was based on classical tradition and, nonetheless, ancient authors were scarcely referred to. According to historian Debby Banham, the early medieval English medical corpus "suggests a rather self-sufficient medical community in England, with limited historical awareness or contact with wider developments."<sup>159</sup>

Many scholars perceive a shift in English medical writing around the eleventh or twelfth century, which would coincide with the new Arabic influence on the Continent. Historian Burnett sketches a range of "new scientific books" in the twelfth century mainly of Arabic origin.<sup>160</sup> Banham describes what she calls 'new medicine' in England in the middle of the

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<sup>151</sup> Cockayne, *Leechdoms Wortcunning, and Starcraft of Early England*, xxiv; Stephanie Hollis, "Scientific and Medical Writings," in *A Companion to Anglo-Saxon Literature*, ed. Phillip Pulsiano and Elaine Treharne, 188–208 (Oxford: Blackwell, 2001), 194.

<sup>152</sup> Audrey Meany, "The Practice of Medicine in England about the Year 1000," *Social History of Medicine* 13, no. 2 (2000): 236; Hollis, "Scientific and Medical Writings," 202.

<sup>153</sup> Kim E. Hummer, "Rhus Pharmacology: Antiquity to the Present," *HortScience* 45, no. 11 (2010): 1588.

<sup>154</sup> Hollis, "Scientific and Medical Writings," 199.

<sup>155</sup> Buck, "Woman's Milk," 468.

<sup>156</sup> *Ibid.*, 476.

<sup>157</sup> Voigts, "Anglo-Saxon Plant Remedies," 266.

<sup>158</sup> Debby Banham, et al, "Medicine at Bury in the Time of Abbot Baldwin," in *Bury St Edmunds and the Norman Conquest*, ed. Tom Licence, 226–46 (Woodbridge: Boydell & Brewer, 2014), 229.

<sup>159</sup> Debby Banham, "Dun, Oxa and Pliny the Great Physician: Attribution and Authority in Old English Medical Texts," *Social History of Medicine* 24, no. 1 (2011): 57.

<sup>160</sup> Burnett, "The Introduction of Scientific Texts into Britain," 451.



eleventh century. This ‘new medicine’ was a fusion of medical texts arriving from Europe and old native English medicine – although both stemmed from the same Greek sources.<sup>161</sup> These new English medical texts did still contain recipes, which seemed to have become more complex and exotic. The texts also included more discussion of medical humoral theory, for example by Galen and other authorities. The import from the Continent additionally meant the introduction of a “specialised, largely Greek-based, vocabulary of medical Latin [...], along with standard measurements (dram, scruple, and ounce) and standard symbols for them, and also the names of the standard medical authorities of the later Middle Ages.”<sup>162</sup> Banham concludes that this new medicine looked more learned and enabled England to communicate about medicine with the Continent,<sup>163</sup> thereby extending their self-sufficient community.

As mentioned above, in the fourteenth century, medical practice in the vernacular was revived. From the fourteenth century onwards, considerably more manuscripts were produced, both in Latin and the vernacular,<sup>164</sup> reflecting a rise in literacy. Burnett argues that this century transformed the medical book in England. Manuscripts for university purposes became outnumbered by practical books for households, which mostly comprised translations of Latin medical treatises into Middle English, albeit without the more theoretical parts.<sup>165</sup> A survey of medical manuscripts in England points out that “the Middle English [manuscripts] rise sevenfold from the thirteenth to the fourteenth century, while the Latin double; again from the fourteenth to the fifteenth century, the Latin double, but the ME increase sixfold, and amount to about one-fifth of the Latin.”<sup>166</sup> So, from the fourteenth century on, there is a large increase in vernacular medical manuscripts, amongst which probably many practically-orientated ones.

In the next chapter, medical texts from the Early and Late Middle Ages will be compared, to discover whether these scholarly statements about their differences can be confirmed in a dysentery case study.

### *Vernacular/Popular versus Latin/Academic Texts*

These new translations into the vernacular have sparked a debate between modern scholars whether these vernacular texts are as learned as Latin texts. Vernacular texts are often

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<sup>161</sup> Banham, et al., “Medicine at Bury in the Time of Abbot Baldwin,” 228.

<sup>162</sup> *Ibid.*, 229.

<sup>163</sup> *Ibid.*, 229.

<sup>164</sup> Jones, “Medicine and Science,” 434.

<sup>165</sup> Burnett, “The Introduction of Scientific Texts into Britain,” 461.

<sup>166</sup> Dorothea Waley Singer, “Survey of Medical Manuscripts in the British Isles Dating from before the Sixteenth Century,” in *Proceedings of the Royal Society of Medicine, Section of History of Medicine* 12 (1918–1919): 101–102.

categorised as popular or practical, while Latin works are mostly perceived as theoretical or academic. Medical historian Getz claims that there is no distinction in learnedness between vernacular and Latin texts. She acknowledges that academic texts were often written in Latin and popular texts often in the vernacular, although both were indebted to the same older sources and translations. There is also crossover between the two categories, since medico-magical charms are found in Latin texts and vernacular texts do feature some theory. Additionally, the fact that both vernacular and Latin texts were written down, which could only have been done by an educated person, shows the books must all contain some degree of learnedness.<sup>167</sup> This last argument of Getz is reinforced by medical historian Peter Murray Jones, who states that the vernacular popular practice was still for the literate elite only.<sup>168</sup> Similarly, Nutton argues it should not be assumed that the university doctor was superior to one lower in the hierarchy or that a text written in the vernacular was any less learned or more representative of popular practice than one in Latin.<sup>169</sup>

On the contrary, medical historian Francisco Alonso Almeida emphasises the difference between academic and popular texts in his edition of a Middle English remedy text. He argues that popular medicine, predominantly written in the vernacular, was unorganised and unlearned, and classifies it as non-theoretical medicine focused on treatment with *materia medica*.<sup>170</sup> Its audience would have been lay physicians and those interested in medicine, a large public as vernacular texts are more extant than academic ones.<sup>171</sup> Academic treatises on the other hand comprised theoretical, mostly Latin texts including specialised knowledge from medical authorities, such as the original Latin works by Gilbertus Anglicus.<sup>172</sup> These texts were organised more neatly in chapters ordered from head to toe and were meant for university doctors, who could read Latin and followed medical tradition.<sup>173</sup>

Medieval literary historian Rossell Hope Robbins highlights the contemporary distinction between the two categories. He argues that in the Late Middle Ages, the division between vernacular and Latin practice socially separated the university-trained doctors from other healers. The former even endeavoured to exclude these non-graduates from practice in 1421. Accordingly, in the eyes of their contemporaries, those who had not studied academic Latin

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<sup>167</sup> Getz, *Medicine in the English Middle Ages*, 35–36.

<sup>168</sup> Jones, “Medicine and Science,” 447.

<sup>169</sup> Nutton et al., “Early-Medieval Medicine and Natural Science,” 337.

<sup>170</sup> Alonso Almeida, *A Middle English Medical Remedy Book*, 9–10.

<sup>171</sup> *Ibid.*, 35.

<sup>172</sup> *Ibid.*, 34.

<sup>173</sup> *Ibid.*, 9, 10, 27.

texts were unlearned and incompetent. Nonetheless, Robbins adds that both classes relied on the same sources to learn their craft and that their procedures of treatment were also similar.<sup>174</sup> Thus, at least the distinction between popular and academic practice was probably more status-related than knowledge-related.

All in all, the opinions of scholars differ on the learnedness and function of vernacular and Latin medical texts. There are vernacular texts, Latin ones, more practically-orientated and theoretical texts – whether these categories overlap or are even synonymous is debatable. As Jones concludes, it can be assumed that every vernacular work was a translation and adaptation of a Latin text<sup>175</sup> and that they therefore both stemmed from the same sources. In the next chapter, it will be examined whether this difference between popular and academic texts can also be found in a selection of solely vernacular texts on dysentery.

### *Practice*

Little is known about actual medical practice in the Middle Ages. Books could be a useful source, which, apart from records and personal notes, mostly comprised substantive medical texts. Thus, one might be quick to assume that these texts reflected the practice. Nevertheless, many books only described medical theory and it is to be presumed that medicine was not as technical in real life. Similarly, pharmaceutical books listing recipes with many ingredients and inventories of thousands of different plants, did not reflect the contemporary pharmacopeia, which was probably more limited.<sup>176</sup> Even books containing practical notions were prescriptive rather than records of actual practices.<sup>177</sup> With these books, one does not know if their recipes or surgical operations were truly successful or even attempted, as the medical book could have been an automatic copy of an ancient text.<sup>178</sup> In these manuscripts, practice and experience are only visible through notes, added sections and mindful copying.

The treatments or the application of theory in these medical texts must often have been modified to the wealth of the patient, the experience of the doctor and the availability of ingredients.<sup>179</sup> The theoretical knowledge of the physician also played a role. The limited Greek theory available in the Early Middle Ages must have already made for difficult treatment. Remedies were created according to a person's complexion, taking into account horoscopes

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<sup>174</sup> Robbins, "Medical Manuscripts in Middle English," 394–395.

<sup>175</sup> Jones, "Medicine and Science," 434.

<sup>176</sup> Riddle, "Theory and Practice," 145.

<sup>177</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 120.

<sup>178</sup> Grmek, *Western Medical Thought*, 289; Pormann and Savage-Smith, *Medieval Islamic Medicine*, 162.

<sup>179</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 120, 147–148.

and various other factors able to alter humours.<sup>180</sup> Arabic medicine only took this complexity further: ingredients should combine to a certain degree of a humour which required exact quantification. Therefore, theory distanced from practice and vice versa, as most doctors would not know or understand every new theory<sup>181</sup> and medicine could be studied at university without practicing it.<sup>182</sup>

One must also take into account various illiterate or unlearned healers practicing popular medicine. Astrological or magical medicine was sometimes recorded in books, as well as Christian healing prayers, but popular practice must have been employed far more than is chronicled.<sup>183</sup> Both in the medieval Islamic world and in Europe, medical care was pluralistic – both trained doctors and ‘quacks’ could practice medicine.<sup>184</sup> However, the amount of academic physicians’ writings is disproportionate, as others would or could not write.<sup>185</sup> The same was true for the earlier Middle Ages, when mostly monks were literate, although there existed many different types of doctors, such as herbalists or midwives.<sup>186</sup> Thus, the medieval medical manuscripts provide a narrow, elitist selection of the medical practice, if even an accurate image at all, but unfortunately that is all that is left.

### *Conclusion*

To summarise, this introductory chapter has firstly reviewed the history of medicine for a general understanding of its theories and changes. This transformation from early to later medieval medicine has also been examined in English manuscripts, laying the basis for the comparative analysis in the next two chapters. Furthermore, the general description of dysentery and how it was perceived in the Middle Ages is essential for the rest of this thesis. The last part concerning medical practice is not explicitly treated in the next chapters, but is useful to understand the limitations of the study of medical texts.

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<sup>180</sup> Riddle, “Theory and Practice,” 172.

<sup>181</sup> E. Lev and Z. Amar, “Practice versus Theory: Medieval Materia Medica according to the Cairo Genizah,” *Medical History* 51, no. 4 (2007): 507–526; Siraisi, *Medieval & Early Renaissance Medicine*, 146.

<sup>182</sup> Of course, university students also participated in practical cases, but it is noted that some graduate physicians only wrote medical advice from a distance, without seeing the patient (Siraisi, *Medieval & Early Renaissance Medicine*, 38).

<sup>183</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 143.

<sup>184</sup> Pormann and Savage-Smith, *Medieval Islamic Medicine*, 162.

<sup>185</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 65.

<sup>186</sup> Buck, “Woman’s Milk,” 469.

## CHAPTER 2: DYSENTERY IN OLD AND MIDDLE ENGLISH MEDICAL TEXTS

This chapter comprises a comparative analysis of Old and Middle English medical texts. First, early medieval Old English medical treatises and their remedies against dysentery will be examined. Next, later medieval Middle English medical books and their remedies will be discussed.<sup>187</sup> These two sections will result in a comparison between the texts, to explore a difference between Old and Middle English medicine, and between popular and academic texts. This comparative analysis will show whether the treatment of dysentery changed or improved over the course of the Middle Ages.

### *Old English Medical Texts*

In this section, the dysentery remedies in the Old English *Leechbooks*, *Lacnunga*, and *Herbarium* will be examined. Because these texts comprise almost all extant Old English medical texts, this selection is very representative of this time period's medical knowledge.

#### *Leechbooks*

The most famous Old English medical book is a tenth-century manuscript containing three separate texts, of which *Bald's Leechbook* refers to the first two texts, namely *Leechbook I* and *Leechbook II*.<sup>188</sup> These two texts are separated in outer and inner diseases, respectively, and organised in chapters with remedies ordered from head to toe. *Leechbook III*, because of its lack of organisation, seems to be of a different origin.<sup>189</sup> According to Cameron, *Leechbook III* is the oldest source of Anglo-Saxon medicine, since it uses mostly native ingredients, whereas *Bald's Leechbook* incorporates medical practice from the Mediterranean.<sup>190</sup>

The manuscript was probably written in and possessed by an abbey in Winchester,<sup>191</sup> an important medical centre which owned many medical books and grew the Mediterranean plants

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<sup>187</sup> Not all remedies will be named in this chapter. The rest can be found in Appendix 1. The books are discussed in order of most to least remedies for dysentery.

<sup>188</sup> Edited from Eveline de Vetten, "Herbal Remedies in Bald's Leechbook for Gut Ailments," Masterlanguage class 'Anglo-Saxon Wisdom': Leiden University, 2017.

<sup>189</sup> *Bald's Leechbook: British Museum Royal manuscript 12 D.xvii*, ed. C. E. Wright, Early English Manuscripts in Facsimile, no. 5 (Copenhagen: Rosenkilde and Bagger, 1955), 14; Hollis, "Scientific and Medical Writings," 199–200.

<sup>190</sup> Cameron, *Anglo-Saxon Medicine*, 35.

<sup>191</sup> "Royal MS 12 D XVII," *British Library Digitised Manuscripts*, accessed 10 May, 2017, [http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Royal\\_MS\\_12\\_D\\_XVII](http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Royal_MS_12_D_XVII).

needed for medicine.<sup>192</sup> The book's owner Bald was likely an experienced practitioner.<sup>193</sup> His experience is suggested by the fact that the Leechbooks often mention the phrase "as leeches know"<sup>194</sup> and provide few instructions for the remedies.<sup>195</sup> The compiler of the book, Cild, was probably a scholar researching Greek and Latin medical books, given its classical model in terms of structure and natural aetiology (treating bodily causes).<sup>196</sup>

In the Leechbooks, dysentery is called *utsihte/utsihtan* or *utwærce*, although these terms were used for diarrhoea sometimes as well.<sup>197</sup> Dysentery is said to manifest itself in the OE *wambe* or gut, caused by disruptions of the humours in the body.<sup>198</sup> In *Leechbook I*, nothing is written about gut diseases, since this book only concerns outer diseases. Of the sixty-seven chapters in *Leechbook II*, there are many, circa twenty-one, chapters on the gut. Three of these mention dysentery. There are six less organised chapters on the gut in *Leechbook III* as well, of which one mentions dysentery.

### *Leechbook II*

This book contains three chapters with references to dysentery. The first chapter contains ten remedies for various problems in the gut area, including dysentery, and these recipes consist of fasting, bloodletting, salves and baths. Another chapter only concerns dysentery, which is here called both *utwærce* and *utsiht*. This section provides advice on diagnosis, causes, and ten dietary cures for dysentery. The last chapter features a magical charm and a rational remedy for dysentery.

The most used treatment in *Leechbook II* is a dietary cure. The ten dietary measures mentioned appear to be simple, without any quantities or directions provided. For example, some drinks mentioned are rose water, sharp wine and vinegar. For food, the Leechbook's

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<sup>192</sup> Hollis, "Scientific and Medical Writings," 203. Note: These plants could have grown in AS England, because of an early-medieval warm period, according to Voigts in her article "Anglo-Saxon Plant Remedies and the Anglo-Saxons," 261–3.

<sup>193</sup> Cameron, *Anglo-Saxon Medicine*, 186; Cockayne, *Leechdoms Wortcunning, and Starcraft of Early England*, xxii; Hollis, "Scientific and Medical Writings," 203.

<sup>194</sup> Cockayne, *Leechdoms Wortcunning, and Starcraft of Early England*, 193.

<sup>195</sup> B. Brennessel, M. D. C. Drout and R. Gravel, "A Reassessment of the Efficacy of Anglo-Saxon Medicine," *Anglo-Saxon England* 34 (2005): 183–195.

<sup>196</sup> M.L. Cameron, "Bald's Leechbook: its Sources and their Use in its Compilation," *Anglo-Saxon England* 12 (1983): 153–182; Cockayne, *Leechdoms Wortcunning, and Starcraft of Early England*, xxiii; Hollis, "Scientific and Medical Writings," 198, 200.

Note: Classical model: Rubric, indications, prescription and administration.

<sup>197</sup> This also happens in the other Old English medical texts. All remedies using these three names will be discussed regardless of their translated name.

<sup>198</sup> Cockayne, *Leechdoms Wortcunning, and Starcraft of Early England*, 179.

author advised non-laxative meat (no example mentioned), leek soaked with waybread,<sup>199</sup> old cheese soaked in goat's milk or fat,<sup>200</sup> and barley or wheat gruel with honey. These foods all seem to have a bulk-forming, constipating effect, which is good for dysentery.

Salves are mentioned the second most often in this book. The five salves described mostly consist of oil mixed with herbs. Only one remedy provides accurate measurements and descriptions of the ingredients,<sup>201</sup> such as two handfuls of green rue<sup>202</sup> and four and a half ounces of clear pitch.<sup>203</sup> Yet with the oil – four pints, or as much as seems good – the doctor can be creative: he can decide how much oil and which kind he will use. The salves described are extensive, containing many potentially active ingredients, although it remains the question whether the skin or, even less likely, the intestines, could absorb these ingredients from a salve.

One section provides advice on diagnosis and causes for dysentery, thus a theoretical part. For the diagnosis, the physician must observe the faecal discharge: whether it is thin, contains blood or parts of the gut. One should also look for humours, but how to spot these is unclear from the text. The chapter states dysentery can occur in the upper or lower part of the belly. Dysentery in the upper belly is characterised by pain at the bellybutton and shoulders, thirst, loss of appetite, and blood loss from the rectum. Nothing is written about lower dysentery or what this difference in the disease's location signifies. This diagnosis section hence lacks some (vital) information.

The cause of dysentery is said to be an abundance of faecal discharge, which inflames and wounds the bowels. Dysentery commences at the midriff, when meat juices (from food) mix with blood, and bad humours return to the belly, which causes “yfelan” [evil]<sup>204</sup> discharge with pieces of gut in it. This theoretical part hence combines a humoral cause with other internal causation. The remedies themselves in *Leechbook II* do not seem to contain an underlying theoretical motivation, since they, for example, do not mention humours; therefore they are classified as practical.

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<sup>199</sup> *Plantago major*.

<sup>200</sup> Old ewe's milk cheese is mentioned as remedy for dysentery in Pliny the Elder, *The Natural History*, ed. John Bostock (London: Taylor and Francis, 1855), book xxx, ch. 19.

<sup>201</sup> Appendix 1, remedy 7.

<sup>202</sup> “This plant has the effect also of dispelling crudities, flatulency, and inveterate pains of the stomach [...] for which purpose it is applied as a liniment, with honey, to the whole of the abdomen.” Pliny, *The Natural History*, book xx, ch. 51.

<sup>203</sup> A sticky, gummy substance secreted by trees; sap.

<sup>204</sup> Cockayne, “Leechbook II,” in *Leechdoms, Wortcunning, and Starcraft of Early England: Being a Collection of Documents Illustrating the History of Science in This Country before the Norman Conquest*, vol. 2: 1–360 (Cambridge: Cambridge University Press, 2012), 278–9.

One chapter treats a mix of diseases, starting with a remedy for ‘elfshot’, meaning it incorporates popular, supernatural aetiology. This chapter contains a charm for “utwærce” [dysentery], comprising “brembel sponas” [bramble<sup>205</sup> chips], “mucgwyrt” [mugwort] and “efelastan” [everlasting], as well as three times chanting the psalm *Miserere mei, deus*<sup>206</sup> and nine times *Pater Noster*.<sup>207</sup> According to Cameron, this charm is a combination of rational and magical features: “[t]he magical components are the tip-rooted shoot and the reciting of the *Miserere* and *Pater Noster*; the rest is a rational herbal treatment for diarrhoea or dysentery.”<sup>208</sup> The complexity of the instructions may give the remedy an extra magical feel. The other twenty-two remedies in *Leechbook II* seem to be rational, including a drink made from cheese, honey and milk in the same chapter as the charm.

As such, *Leechbook II* mentions causes, humours and remedies comprising a mix of salves, diet and herbs. Although the book appears to be compiled by one man, the chapters differ in learnedness. This variation could indicate different sources being copied into one manuscript. Especially the theoretical chapter seems learned, even though it misses specifics about the diagnosis and its dietary measures are imprecise. The last chapter seems less learned, because it contains charms and references to the supernatural. Its cheese, honey and milk drink however looks similar to the dietary measures in the second chapter. The first chapter contains only topical remedies for all sorts of gut diseases, which does offer some accurate instructions and measurements.

### *Leechbook III*

As stated above, *Leechbook III* is less organised than *Bald’s Leechbook* and features no explanation of causes or diagnosis, thus no explicit theory. This book contains two herbal remedies and a prognosis. All three are internal, herbal treatments, unlike most of the cures above, which possess only one of these characteristics. The two herbal recipes both contain brooklime,<sup>209</sup> as well as cinquefoil,<sup>210</sup> centaury,<sup>211</sup> lupin, and wild cunila.<sup>212</sup> These two recipes make a brew and a drink, which are said to make the patient feel better soon.

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<sup>205</sup> Any rough (usually wild) tangled prickly shrub.

<sup>206</sup> Psalm 51

<sup>207</sup> Cockayne, “Leechbook II,” 292.

<sup>208</sup> Malcolm Laurence Cameron, “Magical Medicine,” in *Anglo-Saxon Medicine*, 130–58 (Cambridge: Cambridge University Press, 1993): 130.

<sup>209</sup> *Veronica beccabunga*.

<sup>210</sup> OE *cinqfoil* is cinquefoil, *Potentilla* species (rose family). Probably *Potentilla reptans*, European cinquefoil.

<sup>211</sup> OE *curmealle* is centaury.

<sup>212</sup> Probably not *cunila* species as Cockayne translates OE *cunellan*. *Cunila* is native to America and only discovered in the eighteenth century. OE dictionary says: wild thyme.



Interestingly enough, after these two reassuring remedies, the chapter features a prognosis. If the patient is able to retain the brew and drink, he will live. If the brew and drink flow away, he suffers from a “feorhadl” [fatal disease].<sup>213</sup> Thus, the doctor should present both remedies to the patient for a prognosis, not choose between various options as often seems to be the case. The prognosis is based on observation, which appears less fallible than theoretical calculations or astrological charts,<sup>214</sup> which were often based on nothing, although food and drink ‘flowing away’ in someone with dysentery seems like a normal course of the disease. Since the three recipes are based on simple herbal preparations and observation, they can be considered practical and rational.

### *Lacnunga*<sup>215</sup>

The *Lacnunga* can be seen as a collection of folk medicine from an untrained medic, copied somewhat later than *Bald’s Leechbook* (late tenth or early eleventh century). The text indeed contains more magical remedies than *Bald’s Leechbook*, but some herbal medicine too. Especially noteworthy is its lack of organisation: remedies for all kinds of diseases remain unordered.<sup>216</sup> For *utsiht*, two non-magical remedies, one herbal, one dietary; and one charm are mentioned.

First, two non-magical remedies are named. The first instructs to lay a hen’s egg in vinegar for two days or until there is a crack in the shell. Then, the remedy states to beat up the egg in butter, lay it in oil, and put it over a fire for a certain amount of time.<sup>217</sup> This recipe contains specific instructions and takes a long time to prepare, yet the reason for this complexity is unclear, since it seems to become a simple fried egg. The instructions also seem poor: laying an egg in vinegar would dissolve the shell and turn the egg rubbery, making it impossible to beat it up and fry it.<sup>218</sup> Another recipe combines brooklime with wheat and grease to a warm porridge.<sup>219</sup> The herb brooklime was popular in *Leechbook III* as well, perhaps it was recognised

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<sup>213</sup> Cockayne, “Leechbook III,” in *Leechdoms, Wortcunning, and Starcraft of Early England: Being a Collection of Documents Illustrating the History of Science in This Country before the Norman Conquest*, vol. 2: 1–360 (Cambridge: Cambridge University Press, 2012): 320–1.

<sup>214</sup> Siraisi, *Medieval & Early Renaissance Medicine*, 137.

<sup>215</sup> Cockayne, “Lacnunga,” in *Leechdoms, Wortcunning, and Starcraft of Early England: Being a Collection of Documents Illustrating the History of Science in This Country before the Norman Conquest*, vol. 3: 1–80 (Cambridge: Cambridge University Press, 2012): 1–80.

<sup>216</sup> Malcolm Laurence Cameron, “Compilations in Old English,” in *Anglo-Saxon Medicine*, 35–47 (Cambridge: Cambridge University Press, 1993): 45–7.

<sup>217</sup> Cockayne, “Lacnunga,” 19.

<sup>218</sup> “How to make a Naked Egg,” Imagination Station, accessed 1 May 2018, <https://www.imaginationstationtoledo.org/educator/activities/how-to-make-a-naked-egg>.

<sup>219</sup> Cockayne, “Lacnunga,” 47.

as a good native herb. These both seem to be practical, rational remedies because of their simple preparation and lack of theory.

The *Lacnunga* contains a magical charm against dysentery, which is similar to one in *Leechbook II*.<sup>220</sup> The chant from the *Lacnunga* charm is as follows:

Ecce dolgula medit dudum beðegunda breðegunda  
elecunda eleuachia mottem mee renum orþa fueþa  
letaues noeues terre dolge drore uhic. alleluiah.

The chant itself has not been translated anywhere, some scholars stating it does not mean anything,<sup>221</sup> but it ends in *alleluiah* showing a Christian influence. *Leechbook II* does not mention a full chant, only the name of Psalm 51, the *Miserere mei*. Although we can thus not compare the two, from its language it seems unlikely that the chant above is a psalm.

The chant from the *Lacnunga* is followed by the instruction: “[s]inge man þis gebed on þæt se man drincan wille nygan siþan. And Pater noster nigan siþan” [let one sing this prayer over that which a man is about to drink, nine times, and the *Pater noster* nine times].<sup>222</sup> This text is indeed similar to the charm’s instruction in *Leechbook II*, showing they are probably related. Yet, the instruction in the *Lacnunga* appears to be incomplete or vague, since there is no recipe for a drink nor an indication for which disease this charm is, except for the resemblance to the *Leechbook*’s charm. In the *Lacnunga*’s charm, only the magical part is written down, the rational herbal part has been left out.

#### *Herbarium of Pseudo-Apuleius*<sup>223</sup>

The *Herbarium* is an Old English translation of a fourth-century Latin herbal. Four copies survive, the oldest being from around the year 1000, demonstrating its popularity. The book contains an alphabetical list of herbs and several remedies, only one of the copies featuring illustrations. Unlike *Bald’s Leechbook*, the *Herbarium* is not an adaptation, but a close to exact translation of a Latin text. The book thus does not illustrate native Anglo-Saxon medicine,<sup>224</sup> but its popularity shows it must have been incorporated in English practice. The *Herbarium* mentions nine herbs for *utsiht* and one herbal remedy.

<sup>220</sup> Godfrid Storms, *Anglo-Saxon Magic* (Berlin: Springer, 2013), 108. See appendix 1, remedy 21 and 28.

<sup>221</sup> Leslie K. Arnovick, *Written Reliquaries: The Resonance of Orality in Medieval English Texts* (John Benjamins Publishing, 2006), 62.

<sup>222</sup> Cockayne, “*Lacnunga*,” 68–9.

<sup>223</sup> Malcolm Laurence Cameron, “Latin Works Translated into Old English: *Herbarium* and *Peri Didaxeon*,” in *Anglo-Saxon Medicine*, 59–64 (Cambridge: Cambridge University Press, 1993).

<sup>224</sup> Cameron, “Latin Works Translated into Old English: *Herbarium* and *Peri Didaxeon*,” 59–64.

The white waterlily (*Nymphaea alba*) is the only herb mentioned specifically for dysentery<sup>225</sup> and again in a recipe prepared in wine.<sup>226</sup> Additionally, the herb yarrow (*Achillea millefolium*) is prescribed for diarrhoea.<sup>227</sup> The seven other herbs mentioned; horsetail, woodruff, laver, pale stonecrop, tunsing wort, orpine, and knotgrass; do not occur in any other selected medical text, demonstrating they may not have been popular or well available in England, although most are native to Western Europe. Except for the waterlily, the herbs are not described in recipes, so it is difficult to say whether they were used rationally or magically. However, in the light of the other simple herbal remedies in the *Herbarium*, it can be assumed these remedies are practical and rational.

### *Conclusion Old English Texts*

Old English medical texts have often been characterised as unlearned and magical,<sup>228</sup> however, the thirty-seven dysentery remedies demonstrate a mix of practical and theoretical, as well as magical and rational medicine, adapted to a practical need. The Old English texts contain two magical charms, the rest of the remedies is rational. Additionally, all of the remedies are practical, only some theoretical information is present in *Leechbook II*. This mix is apparent in the learned *Leechbook II*, which contains charms and salves as well as diagnostic instructions. As Buck states: “Anglo-Saxons mixed classical Greek medical theories with popular, native medicine, often consisting of magic-like rituals, and Christian liturgical prayers.”<sup>229</sup> The Anglo-Saxons borrowed the humoral theory from Greek sources, but this theory is mostly implicit in their texts, which contain references to nor long explanations about theory. In *Leechbook II* humoral causes and means for diagnosis are mentioned, yet this part misses specifics required to be filled in by a physician’s experience. As Cameron explains, “[t]he Anglo-Saxons do not seem to have grasped the theory of the four humours [...]. References to humours in their medicine are more to ‘harmful humours’ than to specifically unbalanced ones.”<sup>230</sup> Other Old English texts do not contain information on diagnosis, they are solely practical remedy guides. *Leechbook III* is the only text that provides a prognosis method. The Anglo-Saxon remedies are a mix of five salves, two charms, and ten dietary measures. The rest of the remedies consists of

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<sup>225</sup> Cockayne, “Herbarium of Apuleius,” in *Leechdoms, Wortcunning, and Starcraft of Early England: Being a Collection of Documents Illustrating the History of Science in This Country before the Norman Conquest*, vol. 1: 1–249 (Cambridge: Cambridge University Press, 2012): 31.

<sup>226</sup> Cockayne, “Herbarium,” 173.

<sup>227</sup> *Ibid.*, 65.

<sup>228</sup> Singer, *From Magic to Science: Essays on the Scientific Twilight*, 133–167.

<sup>229</sup> Buck, “Woman’s Milk,” 476.

<sup>230</sup> Malcolm Laurence Cameron, “The Humours and Bloodletting,” in *Anglo-Saxon Medicine*, 159–68 (Cambridge: Cambridge University Press, 1993), 168.

herbal medicine and other remedies, such as a bath and a prognosis. The remedies often use the same ingredients, such as the foods cheese, milk, and honey; or herbs such as brooklime and rue. Only the *Herbarium* mentions herbs never used elsewhere in English medieval medical texts, showing the text's non-native character.

### *Middle English Medical Manuscripts*

The next section will examine dysentery remedies in the Middle English *Compendium, Liber, MS Hunter, MS Corpus, MS Rawlinson, and MS Rylands*. These texts are a small selection of vernacular late medieval medical texts, which are much more numerous than early medieval medical texts. Therefore, this selection is less representative than the Old English selection, but is still useful for a comparison.

#### *Gilbertus Anglicus' Compendium medicinae*<sup>231</sup>

Gilbertus Anglicus (1180–1250) was a thirteenth-century English physician. Little is known about his life, but there is evidence that he studied in Paris and Salerno,<sup>232</sup> learning new Arabic-influenced academic medicine. His most influential book is his Latin *Compendium medicinae* (1230–40), which provides an overview of medicine from head to toe in a more or less fixed format. The seven books of the *Compendium* are divided into chapters that include sections on aetiology, diagnosis, prognosis, and recipes.<sup>233</sup> Although this book can be said to be learned, it also contains some popular remedies and charms.<sup>234</sup>

The Middle English version of Gilbertus' *Compendium* is a fifteenth-century translation of the thirteenth-century Latin book. The (partial) translation can be found in about a dozen of English manuscripts.<sup>235</sup> The *Compendium's* Middle English translation was one of the most popular vernacular medical texts circulating in medieval England.<sup>236</sup> Gilbertus was even mentioned in Chaucer's *The Canterbury Tales* amongst the greatest physicians.<sup>237</sup> The various

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<sup>231</sup> Getz, *Healing and Society in Medieval England*.

<sup>232</sup> Getz, *Medicine in the English Middle Ages*, 39.

<sup>233</sup> González-Hernández and Domínguez-Rodríguez, "Migraine in Gilbertus Anglicus' *Compendium medicinae*," 149.

<sup>234</sup> Getz, *Medicine in the English Middle Ages*, 41.

<sup>235</sup> Getz, *Healing and Society*, lxv.

<sup>236</sup> Faye Marie Getz, "Gilbert the Englishman (d. c.1250)," *Oxford Dictionary of National Biography*, ed. David Cannadine (Oxford: OUP, 2004).

<sup>237</sup> Chaucer, "General Prologue," l.434.

extant translations could be related to the late medieval trend of copying more vernacular (scientific) literature.<sup>238</sup>

The Middle English text shows the popularisation or simplification of Latin medicine.<sup>239</sup> The only edited *Compendium* manuscript, the Wellcome MS 537 from 1462, rearranged the Latin text and removed its parts about women, children and animals. Therefore, it was probably meant for a male monastic audience.<sup>240</sup> Additionally, in the translated version, references to authorities are deleted (similar to in Old English medical books), such as the reference to Galen from *Tegni*<sup>241</sup> about three kinds of dysentery (see below).<sup>242</sup> As in all Latin medicine, humoral theory is used by Gilbertus to explain the causes of diseases and their corresponding cures. He for instance provides a long explanation of the anatomy of the gut and stomach, these organs' perceived functions (faculties) and dominant humours. Moreover, several medical procedures to purge humours, such as the use of laxatives and bloodletting, are described.<sup>243</sup> However, treatments occupy the majority of the book.<sup>244</sup> The cures comprise diet, surgery, pharmacy and regimens. Sometimes a dosage, time or method for administering a drug is specified,<sup>245</sup> but, as in most medical books, the preparation often remains vague. For dietary measures, Gilbertus classifies foods according to their texture, not 'scientific' quality, while the latter is done in many theoretical books.<sup>246</sup> The text also does not include Arabic quantification of humoral qualities in medicine. Gilbertus must have known Arabic medicine, but still used the pharmaceutical system of twelfth-century Salerno.<sup>247</sup>

Gilbertus' Middle English *Compendium* contains twenty-five remedies for dysentery.<sup>248</sup> The section on dysentery comprises several different types of recipes, not ordered according to type. Gilbertus mentions purgatives, stricories, dietary measures, syrups, baths, and salves. None of the recipes are magical, they are all rational, and since Gilbertus does not use new Arabic theory for his remedies, they are also practical.

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<sup>238</sup> H.S. Bennett, "Science and Information in English Writings of the Fifteenth Century," *Modern Language Review* 39 (1944): 3.

<sup>239</sup> Getz, *Healing and Society*, xv.

<sup>240</sup> Getz, *Healing and Society*, lii.

<sup>241</sup> Part of the *Articella*.

<sup>242</sup> Getz, *Healing and Society*, xlvi. On f. 254v.

<sup>243</sup> *Ibid.*, xx, xxxiv.

<sup>244</sup> *Ibid.*, xxxii.

<sup>245</sup> *Ibid.*, xxxviii.

<sup>246</sup> *Ibid.*, xxxvi.

<sup>247</sup> *Ibid.*, xxi.

<sup>248</sup> *Ibid.*, 190–197. (f.254v–260)

For the upper or middle gut, twelve dietary measures are provided.<sup>249</sup> Advice for food consists of roasted meat, fenugreek or lettuce gruel to be eaten for seven days, and old cheese soaked in honey. Recommended drinks are rose water when one is sick or diluted wine when the fever has broken. These dietary advices are similar to the ones in *Bald's Leechbook*, containing modest ingredients which appear to be constipating. The simple preparations show the recipes are rational. Some other dietary measures feature new exotic ingredients not found in Old English texts. For food, this comprises thick broth with cinnamon, cloves, *sandragon*,<sup>250</sup> and *dragagant*,<sup>251</sup> bread of yarrow<sup>252</sup> and plantain; and rice or frumenti (Italian wheat) with almond milk. Drinks recommended are bran mastic and *gum arabic*<sup>253</sup> in water, mint<sup>254</sup> with *athanasia*, and cow milk cooked with hot stones taken from running water (a strangely specific instruction). The new dietary measures appear to be a mix of diet and herbal remedy, which could be effective against dysentery.

Four topical remedies are mentioned in the *Compendium*. Like the salves and baths in *Bald's Leechbook*, it is the question whether the medicinal properties could have reached the intestines from the outside. One recipe for a salve contains roses, sumac, mastic, *bdellie*,<sup>255</sup> incense, spodium,<sup>256</sup> *sandragon*, *bole armoniac*,<sup>257</sup> *psidie*,<sup>258</sup> *balaustia*,<sup>259</sup> wormwood, mint,<sup>260</sup> and plantain juice. Substitutions include the use of lovage for myrtle,<sup>261</sup> oak blossoms for *balaustia*, and for *psidie*, oak rinds. This recipe is with fifteen ingredients the longest remedy examined, complex but user-friendly through its exact measurements and substitutions. The translation does still use Latin measurements, such as drams, *ana*<sup>262</sup> and *quantum sufficit*,<sup>263</sup> meaning the user must possess knowledge of Latin pharmaceutical science.

The *Compendium* is the only text containing a separate part on lower gut dysentery,<sup>264</sup> which could mean that upper gut dysentery was more prevalent. Gilbertus recommends

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<sup>249</sup> *Ibid.*, 195.

<sup>250</sup> Dried juice of Liliaceae (lily) (Getz, *Healing and Society*, 351).

<sup>251</sup> Tragacanth gum from Astragalus tree (Getz, *Healing and Society*, 326)

<sup>252</sup> ME *milfoil* is yarrow.

<sup>253</sup> Product of the Acacia senegal tree.

<sup>254</sup> Mint is good for loose bowels and bleeding according to Pliny, *The Natural History*, book xx, ch. 53.

<sup>255</sup> Balsamodendron spp., frankincense and myrrh family.

<sup>256</sup> ME *spodie* is spodium, powder from calcination.

<sup>257</sup> Ammonium chloride.

<sup>258</sup> Bark of pomegranate tree.

<sup>259</sup> Flower of pomegranate tree.

<sup>260</sup> It should probably be ME *myrte* instead of *mynte*, given the substitutions below.

<sup>261</sup> ME *myrte* is myrtle.

<sup>262</sup> Of each the same amount.

<sup>263</sup> However much is needed.

<sup>264</sup> Getz, *Healing and Society*, 196–7.

suppositories and *clistres*<sup>265</sup> to clean the lower gut, yet he stresses that one must be gentle with painful bowels. Personal observation is necessary to check whether all fluid exits again (if this does not happen, it does not say what to do), which must be repeated until the water comes out clean. Then, the physician should employ a cleansing *clisterie (mundificatif*<sup>266</sup>), followed by a *strictorie* to stop the flux, consisting of wheat gruel, cow milk, mastic, bole, *sandragon* and gall, using one pound of this mixture at once. No further recipes or dietary measures are provided. Thus, the lower gut is treated considerably less than the other types of dysentery, although this part appears to be more observatory and personal than the previous part on the upper gut.

Gilbertus starts the chapter with a detailed explanation of dysentery,<sup>267</sup> which is based on theoretical knowledge. Dysentery is said to be one of the four types of flux (diarrhoea): “[o]n is clepid dissinterie, and that is whan a man shiteth blood y-medlid with the shauing of his guttis” [one is called dysentery, which is when a man excretes blood meddled with shavings of his gut].<sup>268</sup> Later chapters treat normal diarrhoea, with a focus on humours; and bloody flux, with a focus on bloodletting. Even though in the fourteenth century causes of dysentery were sought outside the body in the form of air or epidemics, this Middle English translation still seeks the cause from within, in the form of corrupt humours; or outside, in the form of laxative food, one getting hit on the back, or a cold. Furthermore, according to Gilbertus, there are three variants of dysentery:<sup>269</sup> one occurring in the “ouermost” [upper] gut, which is characterised by pain above the bellybutton and diarrhoea type one (see below); one in the middle gut, around the bellybutton; and one in the “nethirmost” [lower] gut, with pain beneath the bellybutton and diarrhoea type two.<sup>270</sup> The three types of diarrhoea in dysentery are as follows. The first type of diarrhoea is similar to the washing of flesh, which is curable; number two is like the shaving of parchment; and the third contains whole parts of the gut, which is incurable. The last type of prognosis is also mentioned by Hippocrates.<sup>271</sup> This upper and lower gut distinction is found in *Bald’s Leechbook* as well, but without these specific symptoms and diarrhoea types. However, what these different versions signify is once more unclear. Additionally, which humour is to

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<sup>265</sup> Enemas.

<sup>266</sup> A cleansing substance (*Middle English Dictionary*, accessed 18 March 2018, <http://quod.lib.umich.edu/cgi/m/mec/med-idx?type=id&id=MED28910>).

<sup>267</sup> Getz, *Healing and Society*, 190–192.

<sup>268</sup> *Ibid.*, 190.

<sup>269</sup> In the Latin version, this part is attributed to Galen.

<sup>270</sup> Getz, *Healing and Society*, 191.

<sup>271</sup> Hippocrates, *Hippocratic Writings*, trans. J. Chadwick, W.N. Mann et al. (Harmondsworth, New York: Penguin, 1983), 173.

blame for the disease, one can perceive by the colour of the faeces. An excess amount of cholera results in green or yellow faeces, both melancholy and blood cause black faeces, and phlegm creates a dark pale colour,<sup>272</sup> all mixed with blood. This observation of humours is mentioned in *Bald's Leechbook* as well, which lacks the directions to actually observe, and, as in *Bald's Leechbook*, which recipes are better for which type of humour is rarely touched upon, demonstrating that Gilbertus' recipes are not theoretical.

The *Compendium's* section on dysentery is unique in various ways. Firstly, the disease has its own dedicated chapter with twenty-five recipes, which is encountered in no other English medieval medical text. Gilbertus uses various rational and practical treatments, ranging from drinks, food, and herbal remedies to salves and baths, which are all mixed throughout the section. The *Compendium* is the only text to advice purgatives, smokes and astringents, which could be useful in dysentery, as well as the only text to distinguish remedies by upper and lower gut. The recipes are often long and contain a myriad of exotic herbs. Sometimes measurements, additions or substitutions are provided, at least more than in other texts, about which Gilbertus does expect prior knowledge, e.g., about 'suche othir strictories'. The section also contains a long explanation of causes and humours, and provides ways for diagnosis and prognosis. Even though the theory is supposedly removed from this translation, it is still more extensive than in the other manuscripts in this chapter.

#### *Liber de diversis medicinis*

The *Liber* is part of a manuscript dating from 1422–1454 written by Robert Thornton, a Yorkshire landowner, for his family. Like the *Compendium*, it features a head to toe order of Middle English recipes, accompanied by a few Latin charms and surgical remarks.<sup>273</sup> The text contains materials from other medical manuscripts, such as older books by Pliny and Hippocrates, and Salernitan texts.<sup>274</sup> Some recipes are attributed to three contemporary English physicians:<sup>275</sup> William of Exeter; the Rector of Oswaldkirk (who are both unknown) and friar William Appleton, who was John of Gaunt's physician; demonstrating the careful selection of good recipes. The *Liber's* medicine follows Galenic theory, which is here assumed or implied, as the theory remains in the background unexplained. Whether the scribe had access to one or multiple original manuscript(s), perhaps in Latin, is unsure. The *Liber* could similarly have been

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<sup>272</sup> Seems like a contradictory colour.

<sup>273</sup> Ogden, *Liber*, xv.

<sup>274</sup> *Ibid.*, xvi, xxi.

<sup>275</sup> *Ibid.*, xiv.



copied from later compilations, Latin or vernacular.<sup>276</sup> This book refers to dysentery as *menyson*, which is the French name, possibly showing French influence in the works copied.

The *Liber* contains fourteen remedies and one prognosis for dysentery.<sup>277</sup> The remedies appear to be simple, practical and rational dietary measures, comparable to those in Bald and Gilbertus' texts. Foods mentioned are wheat used in a cake (twice) or in gruel, and cheese. The herbs yarrow and waybread are also employed twice. Drinks to soak the foods or herbs in are wine (five times), milk (twice) and vinegar. Some recipes however contain precisely specified ingredients, such as the milk of a cow, of which the baby is more than one year old; or a one-year-old rooster filled with virgin wax, eaten without any additional drinks. Others have strange ingredients to modern eyes, such as a recipe with hart's horn powder, even though this ingredient is not magical (see ch.3). One recipe is attributed to the English R. de O., although who this person is, is unsure.<sup>278</sup> His recipe, *quintfoil*<sup>279</sup> juice with sweet milk, is not found anywhere else in the selected Middle English texts. Maybe it was transmitted orally or discovered in a personal text not many scribes had access to. Of these fourteen recipes, most are borrowed from either ancient texts, such as Pliny, who prescribed cinquefoil as well; from Salernitan texts, such as Avicenna, who advised old rooster flesh, and Haly Abbas, who recommended hart's horn; or from several other Middle English texts.<sup>280</sup> Because no theory from these books is incorporated in the *Liber*, these recipes are considered to be practical.

This book also provides a method of prognosis. The instruction dictates to give the patient a pennyweight of garden cress seeds and red wine or water for three days. If he "staunche" [stops bleeding],<sup>281</sup> he lives; if not, he dies. Hopefully, this prognosis recipe was used in combination with the recipes above, since a drink with a few seeds does not seem that curative on its own. The prognosis seems rational, because of the observation, as well as practical, without theoretical background.

Thus, the *Liber* is solely a practical recipe book, with only herbal remedies at that (no salves and charms), granting it does contain one prognosis. The text features no theory or explanations, thus it assumes knowledge of diseases and diagnosis. Several recipes in the *Liber* verge between diet and medicine – as is also the case in Bald and Gilbertus' texts – and they

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<sup>276</sup> *Ibid.*, xvii–iii.

<sup>277</sup> *Ibid.*, 30–32.

<sup>278</sup> Ogden, *Liber*, xvi. Rector of Oswaldkirk.

<sup>279</sup> See *cinqfoil* / cinquefoil. *Quintefeuille* was the Norman name.

<sup>280</sup> Ogden, *Liber*, 96–97.

<sup>281</sup> *Ibid.*, 30.

are simple, without quantities or directions, although some specific ingredients are mentioned. Wine is employed in five of the fourteen recipes, making the *Liber* the largest user of this drink from the selected texts. Wine was seen as healthy: according to Galen, this drink was nutritious and stimulated the production of blood in the body,<sup>282</sup> which could thus be beneficial to dysentery patients.

*MS Hunter 185: A Middle English Medical Remedy Book*

This early fifteenth-century book contains a Latin and Middle English herbal and a Middle English remedy compilation, including some prognostics and charms as well.<sup>283</sup> The editor Alonso Almeida identifies this text as popular medicine, because it focuses on practice and is rather unorganised.<sup>284</sup> For whom this book was written is not sure: probably a lay family, like the *Liber*. Sources for the remedy book are ancient medicine and other Middle English texts. It contains recipes similar to those in the *Compendium*<sup>285</sup> and shares a common medical tradition from the Continent with the *Liber*. *Hunter* and *Liber* also possess the same recipe structure<sup>286</sup> and call dysentery *menison* or *menson*.<sup>287</sup>

Now onto the dysentery recipes, which are far apart in the manuscript, showing the lack of organisation. The manuscript contains two remedies, which are practical and rational. Firstly, for *menison*,<sup>288</sup> the remedy advises to combine rue, waybread and wheat flour, and bake a hot cake. These herbs and wheat, as well as the direction to bake a cake, are often mentioned, but this specific recipe is not found in other books. Furthermore, a recipe for the *bloody menson* is provided.<sup>289</sup> The remedy instructs to take an oak board, shave it, coat with olive oil and let the patient sit on it while it is hot, three or four times a day. This remedy is eccentric as well as unique, and the healing property is unclear, apart from the warm environment. Oak is used in other remedies, however, only internally. The lack of theoretical background makes these remedies practical and the simple instructions tell us they are not magical.

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<sup>282</sup> Grant, *Galen on Food and Diet*, 188.

<sup>283</sup> Alonso Almeida, *A Middle English Medical Remedy Book*, 9.

<sup>284</sup> *Ibid.*, 10.

<sup>285</sup> *Ibid.*, 37.

<sup>286</sup> *Ibid.*, 39.

<sup>287</sup> Note the difference in spelling within the same manuscript, which could show careless copying or the addition of later parts to the MS.

<sup>288</sup> Alonso Almeida, *A Middle English Medical Remedy Book*, 88.

<sup>289</sup> *Ibid.*, 103.

*MS Cambridge Corpus 388,*<sup>290</sup> *MS Oxford Rawlinson C814,*<sup>291</sup> *MS Rylands English 404*<sup>292</sup>

These three fourteenth- and fifteenth-century manuscripts consist of several bound compendia containing mostly Anglo-Norman, Latin and English medical recipes. Dysentery is called *menison*, showing the French influence. These books contain eight dysentery recipes in total, including two prognoses and six herbal remedies.

*MS Cambridge Corpus* and *MS Oxford Rawlinson* both provide a prognosis similar to the *Liber*'s. In *Corpus*, garden cress is called *tuncressen*, probably meaning the same. In *Rawlinson*, some changes have been made to the instructions. The prognosis states: after a three-day fast, take a pennyweight of "soud crassen-seid" [shilling cress seed]<sup>293</sup> and drink this herb after water or wine. If the patient stops bleeding, he lives. If 'it' (probably his faeces) turns another colour, he will not. This prognosis is similar to the one in *Liber* and *Corpus*, nevertheless, it changes the 'if he' ending and is less specific about the seeds. Similar to the *Liber*'s prognosis, their simple instructions and focus on observation means these prognoses are rational and practical.

The three manuscripts contain a total of six remedies, all rational, practical herbal recipes. In *Corpus*, three remedies are presented, sharing the same ingredients and directions as in the *Liber*, such as the milk of a cow that had no calf that year, hot red wine with parsley, and wheat boiled with salt. The scribe must have either copied parts of the *Liber*, which is not likely since it was family-owned; or they share a common source, a Latin or Middle English medical text.

In *Rawlinson* and *Rylands*, a similar recipe is provided for dysentery. The first reads: make a cake of English "mougwed" [mugwort] and wheat flour. The *Rylands* recipe creates a cake of smashed yarrow and waybread with wheatflower juice. Herbal cakes are popular in Middle English texts. The *Liber* also contains a yarrow cake, and *Hunter* features a rue and waybread cake. Perhaps the scribes combined popular recipes from other Middle English texts. *Rylands* additionally contains another recipe with yarrow and waybread, now in a drink with white wine or ale. This recipe resembles one in *Hunter*, although in the latter more instructions are provided: one should drink it hot in the evening and cold in the morning, for three or four

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<sup>290</sup> Hunt and Benskin, *Three Receptaria from Medieval England*, 170.

<sup>291</sup> *Ibid.*, 123.

<sup>292</sup> "English MS 404," University Library of Manchester, <http://www.library.manchester.ac.uk/inthebigynnyng/manuscript/ms404/>

<sup>293</sup> ME *soud* is a shilling, which would contradict the pennyweight.

days.<sup>294</sup> These six remedies all resemble other practical, rational Middle English remedies, which have no magical or theoretical background.

### *Conclusion Middle English Texts*

In total, the Middle English medical texts contain fifty remedies. The most common kind of remedy in the texts is a dietary measure, such as a food or drink, sometimes with herbs, which comprises thirty-five of the fifty remedies. The rest is a mix of several kinds of remedies, including three prognoses and four topical remedies. Most notable in the selected Middle English texts are the numerous recipes repeated in several of the texts, such as the three similar prognoses, meaning they are either copying from each other or from the same source. These recurring remedies often entail mundane ingredients, such as yarrow and waybread in wine, and they are all rational. Of all the Middle English texts, only Gilbertus uses unique exotic herbs and ingredients, lists complex and innovative forms of remedies, and discusses causes and diagnosis. The rest merely contains (similar) remedies, sometimes borrowed from ancient or Salernitan sources. The Middle English text of Gilbertus does share material with the Middle English books, nonetheless it is not sure if they have a common source, or they copied Gilbertus.<sup>295</sup>

### *Comparison*

Now that the selected Old English and Middle English medical texts have been discussed, a comparative analysis will be presented. In this paragraph, the relative similarities will be discussed, since the books possess some of the same qualities and shortcomings. In light of the eighty-seven recipes, there are several limitations in the selected texts. First of all, exactly why these specific ingredients are used in the recipes is never explained, which makes finding substitutions hard for the unlearned user of the book. Similarly, various types of remedies, such as salves or dietary measures, are mixed, often without a recommended combination or order of remedies to execute, which suggests these different types were seen as equally effective or that the user was assumed to know the best combinations. Furthermore, few measurements, directions and substitutions are provided in the remedies, which demonstrates the need for (practical) experience and knowledge in the user.

Multiple recipes appear to be copied from other sources. The question therefore arises whether the owner/writer of the book actually tried these remedies or copied them mindlessly,

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<sup>294</sup> Alonso Almeida, *A Middle English Medical Remedy Book*, 106.

<sup>295</sup> Getz, *Healing and Society*, xvi.

which is even more difficult to say without any practical notes, which do not appear in the selected medical texts. This copying however occurs less in Old English texts than in Middle English texts, which could be because of the lower availability of medical books to copy. Nevertheless, this lack of repetition may also be because there are fewer extant manuscripts from the Anglo-Saxon period and, therefore, it is harder to establish what is copied from what.

Lastly, in all the recipes, there is a level of confusion about the name for dysentery. Dysentery has various different medieval names, which should be known to the reader or copyist. In Old English texts, *utsiht* can be interpreted as (bloody) diarrhoea as well, which must have been confusing to the reader. Dysentery is better distinguished from other diseases in Middle English texts. There, the disease sometimes possesses its own section and a more obvious name, either a spelling variant on *menison* or *dissenterie*. Both the French and Latin name are used in the texts, although in this selection *menison* is most frequently employed, which could point to a large French influence or the use of the same (Anglo-Norman) sources. The shortcomings of the recipes – the lack of instructions, order and explanation – show these texts could all function as manuals of doctors who possess prior knowledge of treatments.

Apart from the shared characteristics above, some of the texts' remedies contain unique features. To begin with, only *Bald's Leechbook* prescribes bloodletting for dysentery (and other gut ailments). The text does not instruct to investigate whether the patient is suffering from an excessive amount of the humour blood, which questions whether the Anglo-Saxon physician truly understood the theory of bloodletting.<sup>296</sup> In the *Compendium*, bloodletting is only practiced for bloody flux, a disease similar to but not equal to dysentery, attributed to an excessive amount of blood. Moreover, solely Gilbertus advises suppositories, laxatives and enemas to purge excessive humours, and *strictories* to stop the diarrhoea, which is in contrast to e.g., *Bald's Leechbook*, which advises non-laxative meat. Furthermore, Gilbertus, unlike the rest, seems focused on a wealthy audience with his exotic ingredients such as incense, sumac and mummy gum. The question remains if an English monastery with a herb garden possessed these eccentric ingredients. The *Herbarium* shows many unique ingredients as well. Perhaps this book's Latin original had different sources, or its translation is not copied in other books because of the unavailability of its ingredients. The remaining remedies, both in Old and Middle English texts, are quite mundane, catering to those with a modest income or without the availability of an extensive pharmacy. Lastly, in the *Liber*, one dysentery recipe is explicitly

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<sup>296</sup> Cameron, *Anglo-Saxon Medicine*, 168.

attributed to an unknown person. The rest is mostly quietly copied from other sources. In the *Compendium*, the references from the Latin version are even purposely removed in translation. These unique features demonstrate some of the texts do contain noteworthy different theories and ingredients, especially Gilbertus’.

Next, the differences between medical theoretical information in the texts will be discussed. The principal change described in scholarship between Old and Middle English medical texts is the influence of new Arabic texts and theory. Did Arabic medicine appear in Middle English manuscripts, those translated into or written in the vernacular from the fourteenth century on? This Arabic shift would mean the inclusion of mathematical systems, more extensive humoral theory, new ingredients, diagnosis using the pulse, more sources, and philosophy of medicine.

Firstly, the theory in the books probably stems from the same classical, continental sources, at least in *Bald’s Leechbook*, the *Herbarium* and the Middle English texts. The *Lacnunga* and *Leechbook III* could be native English medicine, (partly) dependant on oral sources. The fact that the theory is based on classical medicine, means the texts are all focused on humoral theory for aetiology and diagnosis, and on the purging and balancing of the humours for treatment. However, the scribes did not copy the ancient physicians exactly, but selected what was useful in English practice. For instance, Pliny provided several quite peculiar recipes for dysentery, containing lizards, snails, snakes and pigeon dung,<sup>297</sup> which apparently the English did not fancy. Similarly, Hippocrates often mentioned dysentery. He provided no cures, but did explain symptoms, causes, conditions and prognosis,<sup>298</sup> of which only some are adopted in the English texts.

Some other earlier sources are alluded to in the texts, since in both the *Compendium* and *Bald’s Leechbook*, the cause of dysentery is attributed to an abundance of faecal discharge, similar to in Isidore and Savonarola.<sup>299</sup> Nevertheless, none of the Middle English books have incorporated the new ‘bad air’ theory by Gordon or the epidemic theory by Valesco from the fourteenth century.<sup>300</sup> Perhaps the scribes were not learned enough to know these theories or depended on older sources. Furthermore, more theoretical parts on diagnosis are only present in the *Compendium* and *Bald’s Leechbook*, which focus on observation, symptoms and waste

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<sup>297</sup> Pliny, *The Natural History*, book xxx, ch.19.

<sup>298</sup> Hippocrates, *Hippocratic Writings*. References to dysentery occur throughout the book.

<sup>299</sup> DeMaitre, *Medieval Medicine*, 260; Wallis, *Medieval Medicine*, 9.

<sup>300</sup> DeMaitre, *Medieval Medicine*, 264.

products. In this aspect, Gilbertus is more specific and extensive than *Bald's Leechbook*, possibly showing a deeper understanding of theory. Still, there is more similarity between *Bald's Leechbook* and the *Compendium* in theory and lay-out than between contemporaries, which would demonstrate a lack of progress in vernacular medical writing. Most medical texts in this chapter's selection contain the same prognosis instruction (three out of four are the same), which is not astrological, but based on observation, seemingly without a complex theory behind it. The remainder of the treatises consists of (herbal) remedies, of which some are simple, although some, especially in the *Compendium*, are complex. These treatments were probably created using humoral theory, even though the theoretical background is implicit in these parts. All in all, a bare amount of explicit theory is found in the selected texts and what is found, is based on the same ancient sources. Middle English texts do not seem to be more innovative in this aspect.

From the comparative analysis above, it is clear that Arabic influence is almost non-existent in the selected medical treatises. Gilbertus studied in Salerno and wrote the most learned book of the selected Middle English texts, but he does not use new Arabic theories, not even in the Latin manuscript.<sup>301</sup> The book does contain Arabic ingredients (without mathematical degrees) and a longer theory-based diagnostic part. Theory from newly-translated Arabic works, such as Avicenna, is not found in dysentery sections, although some practical remedies from the *Liber* and the *Compendium* are borrowed from Avicenna and Haly Abbas. Through this copying method, it is visible that some vernacular works adapted their translations to practice and thus selected only the remedies from a learned work.

Of exotic herbs and ingredients, which would have been imported from Africa, a greater amount is identified in Middle English texts than in Old English ones, especially in the *Compendium*. Nevertheless, the mundane ingredients are the ones that are repeatedly used, sometimes even in the same combination, such as yarrow, waybread, milk, wine and wheat, both in Old and Middle English texts. These ingredients could have been considered effective or are the product of (mindless) copying from the same sources. Of these modest ingredients, several are found in the Arabic *Tacuinum*. Wheat is said in the *Tacuinum* to be responsible for constipation, which could be useful in dysentery.<sup>302</sup> Baked old cheese heals diarrhoea<sup>303</sup> and chicken eggs delay digestion.<sup>304</sup> Similarly, wine is good for thirst and vinegar beneficial for

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<sup>301</sup> Getz, *Healing and Society*, xxi.

<sup>302</sup> Arano, *Tacuinum Sanitatis*, 102.

<sup>303</sup> *Ibid.*, 104.

<sup>304</sup> *Ibid.*, 105.

appetite.<sup>305</sup> In older sources, such as Dioscorides' *De materia medica*, some of the more exotic ingredients are found. Mastic, a popular ingredient in the *Compendium*, is already described by Dioscorides for dysentery, as well as the Middle English ingredients hart's horn, wax and sumac; and the ingredients oak, barley, fenugreek, marshmallow and white waterlily, which are (also) mentioned in Old English texts.<sup>306</sup> This last book was thus popular to create recipes from, both in Old English and Middle English texts. Thus, several of the ingredients used in Middle English texts may stem from the Arabic *Tacuinum*, but they were already employed in Old English texts as well; and many of the exotic Middle English ingredients may have been based on older sources, such as Dioscorides, also a source for Old English texts. The majority of the Middle English ingredients for dysentery are therefore not influenced by new Arabic texts. And, as mentioned above, it is the question whether the exotic Arabic ingredients from the *Compendium* were even available in England, illustrating the gap between books and practice.

Apart from the shift to Arabic medicine, can the 'new medicine' described by Banham be distinguished in the texts? Banham's new medicine refers to the English change from isolated to Continental-influenced medicine from 1100 on, including more theory and complex recipes.<sup>307</sup> In the fourteenth- and fifteenth-century books, some new ingredients are used, especially in the *Compendium*. Gilbertus is also the only one with more theory, Latin measurements, and a new medical vocabulary. Nevertheless, references to authorities and most theory is edited out of this Middle English translation. Besides, Old English medicine for dysentery is not as isolated and popular as Banham describes, as demonstrated by *Bald's Leechbook's* Mediterranean sources. Therefore, when it comes to the treatment of dysentery in early and late medieval England, Banham's proposed development towards a 'new medicine' is not found as explicitly as she describes.

Another scholarly debate, discussed in the previous chapter, questions the difference between popular and academic texts, and vernacular and Latin texts. Here, the debated distinction between popular and academic vernacular texts is applied to the remedies for dysentery examined above. Although English universities rose in the fifteenth century, alongside a new trend in translating scientific texts, none of the selected manuscripts can be considered academic texts. The Middle English translation of Gilbertus' *Compendium*, because of the removal of theory, cannot be said to be an academic text, even though Gilbertus himself

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<sup>305</sup> *Ibid.*, 108.

<sup>306</sup> Dioscorides, *De Materia Medica*, trans. Julius Berendes, Wikisource, accessed 18 March 2018, [https://en.wikisource.org/wiki/De\\_Materia\\_Medica](https://en.wikisource.org/wiki/De_Materia_Medica).

<sup>307</sup> Banham, et al, "Medicine at Bury in the Time of Abbot Baldwin," 228.



was an academic. The other Middle English texts could be part of the new vernacular translation or copying trend from the fourteenth century onwards for lay people, who possessed household books instead of academic books. These household remedy books are indeed more numerous in this vernacular selection, but can these be considered popular medicine?

Firstly, one must agree with Getz that the selected Old English and especially Middle English texts stem from the same ancient sources and are written down, while only the learned elite could write, meaning they are all learned in some way.<sup>308</sup> Similarly, they contain a mix of remedies, with charms in more learned texts (*Bald's Leechbook*) and rational herbal remedies in 'magical' texts (*Lacnunga*). The difference between learned and magical texts is thus certainly not as great as Alonso Almeida has posited.<sup>309</sup> Not one of the selected texts can be said to be completely unlearned and unorganised, nor can any be categorised as an academic text full of theory and explanations. The only difference that can be seen between practical texts (the remedy books) and more theoretical texts (Gilbertus and Bald) is that the latter contain some theoretical explanations, although they are still practically-orientated when it comes to dysentery remedies. In this respect, neither one of the time periods seems to provide more theoretical texts, even though the practical texts are (relatively) more numerous in the later Middle Ages.

The intended audience of the practical and more theoretical books may have been different: Middle English remedy compilations might have functioned as household books for lay people, whereas the more theoretical books could have been meant for a monastery with an infirmary. Also, the scribes of medical texts differ. Unlike the Old English texts, which are most likely written in a monastery, thus giving a limited view of medical practitioners, the Middle English texts are the result of a more distinguished hierarchy of physicians. Gilbertus was an academic physician and his Middle English scribe and translator could have been a learned monk. The *Liber* is written by a (rich) scribe/landowner without medical training, yet in possession of knowledge of Latin and a library of medical texts. The writers of the rest of the Middle English texts are unknown, but they could have been interested laymen as well, compiling homemade remedy books from earlier sources. This difference in audience and scribe does not change the way the remedies are written: all refer to 'the patient', thus from a doctor's point of view.

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<sup>308</sup> Getz, *Medicine in the English Middle Ages*, 35–36.

<sup>309</sup> Alonso Almeida, *A Middle English Medical Remedy Book*, 9–10, 35.

### *Conclusion*

In this selection of medical texts, no strict difference between Old and Middle texts could be discovered, since the new Arabic theory does not provide a fully different outlook on dysentery and Banham's 'new medicine' is not revealed either. Similarly, the Middle English treatments, except for Gilbertus', do not seem too different from the Old English ones. Yes, the Middle English texts use more unique, exotic ingredients than the Old English ones, but this happens solely in Gilbertus' text. Thus, a greater amount of difference is to be found between vernacular practical and more theoretical texts. However, Alonso Almeida's distinction between popular and academic texts seems too severe, since not all texts with theory are academic, see *Bald's Leechbook*, and not all texts for practical purposes are unlearned, see the *Liber*. The more theoretical works of Bald and Gilbertus resemble each other in causes, explanation and several remedies, although the *Compendium* is obviously more extensive, even in translation. Gilbertus' text hence does show some improvement in theory, still, this is not reflected in other Middle English texts, which only contain similar remedies without obvious theoretical parts or many new ingredients and practices.

It is a good question why this research on medieval dysentery remedies differs from scholarship on general medieval medicine. Perhaps this difference exists because of the choice of texts. For Middle English texts, mostly vernacular, practical texts were chosen, while the new Arabic medicine was probably largely visible in Latin theoretical texts. Or possible dysentery is special in that regard, needing less innovation in remedies for some reason. Whether the remedies in Old English and Middle English texts would have actually been effective against dysentery according to modern science, is discussed in the next chapter.

### CHAPTER 3: EFFICACY OF MEDIEVAL DYSENTERY REMEDIES<sup>310</sup>

In this third chapter, the efficacy of the medieval dysentery remedies mentioned in the previous chapter will be studied. The last few years there has been a growing attention for examining the effectiveness of medieval medicine, which has resulted in some surprising conclusions. Various research projects have discovered that some medieval recipes, or herbs used therein, were as effective against a medical complaint as modern medicine.<sup>311</sup> These medical studies focused mostly on antibacterial and antiviral properties of the remedies, since modern antibiotics are becoming less effective.

Until far into the twentieth century, medieval medicine was seen as ineffective. Scholar T.A.H. wrote about a fifteenth-century leechbook: “early medicine practitioners have instinctive belief in the therapeutic effect of anything nasty.”<sup>312</sup> Similarly, medical historian Charles Singer argued Anglo-Saxon medicine is useless and based on magic: “[m]ost herbals are quite devoid of any rational [...] or scientific basis.”<sup>313</sup>

However, from the late twentieth century onwards, scholars of early medieval medicine started to shift their negative view. Anglo-Saxonists J.M. Riddle and C.H. Talbot declared that Anglo-Saxon medicine should no longer be viewed as unlearned and superstitious.<sup>314</sup> The biologist and Anglo-Saxonist Cameron added his medical knowledge to this discussion. He concluded through the examination of remedies from *Bald’s Leechbook* that “some ancient remedies must have had beneficial effects” and were based on professional experience and observation.<sup>315</sup>

More recently, scientific research proved the effectiveness of an Anglo-Saxon eye infection remedy, which was found to kill the MRSA bacteria.<sup>316</sup> The recipe comprises a salve

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<sup>310</sup> Some parts edited from Eveline de Vetten, “Herbal Remedies in Bald’s Leechbook for Gut Ailments,” Masterlanguage class ‘Anglo-Saxon Wisdom’: Leiden University, 2017.

Not all herbs and ingredients are discussed in this chapter. The rest can be found in Appendix 2.

<sup>311</sup> See footnotes 7 to 10.

<sup>312</sup> T.A.H., “About A Leechbook: or Collection of Medical Recipes of The Fifteenth-Century,” *Nature* 134 (1934): 270–71.

<sup>313</sup> Singer, *From Magic to Science: Essays on the Scientific Twilight*, 133–167; Charles Singer, “The Herbal in Antiquity, and its Transmission to Later Ages,” *Journal of Hellenic Studies* 47 (1927): 1–52, quoted in Cameron, “Anglo-Saxon Medicine and Magic,” 205.

<sup>314</sup> J.M. Riddle, “Ancient and Medieval Chemotherapy for Cancer,” *Isis* 76 (1985): 519–30; C.H. Talbot, “Some Notes on Anglo-Saxon Medicine,” *Medical History* 9 (1965): 156–69.

<sup>315</sup> Cameron, “Anglo-Saxon Medicine and Magic,” 191–215.

<sup>316</sup> “Anglo-Saxon Medicine is Able to Kill Modern-day Superbug, Researchers Find,” *MEDIEVALISTS.NET*, last modified March 30, 2015, <http://www.medievalists.net/2015/03/anglo-saxon-medicine-is-able-to-kill-modern-day-superbug-researchers-find/>.

made from two species of allium (garlic and onion or leek), wine and ox gall (bile from a cow's stomach) brewed in a brass vessel for nine days. Both the ingredients and the procedure added to the remedy's antibacterial qualities. Similarly, another group studied three British plants used in Anglo-Saxon leechbooks – yarrow, white horehound and St. John's wort –, which are still very effective in modern medicine.<sup>317</sup> All in all, there is significant evidence, in scientific and literature research, that these Anglo-Saxon remedies could have been and still are effective. Unfortunately, these studies concern only Anglo-Saxon medicine. Not much is written about later medieval medicine's efficacy. The effectiveness of traditional Chinese and Iranian medicine however has been studied with good results,<sup>318</sup> as well as that of Avicenna's herbs.<sup>319</sup>

This chapter will endeavour to research whether medieval remedies against dysentery would be effective, building on last chapter's comparison of early and late medieval texts, and of practical and more theoretical texts. The research will comprise examining the properties prescribed to the herbs in the past and present and the effectiveness of the combined properties in the remedies.

What would make a good dysentery remedy? Dysentery patients first of all need antibacterial, antifungal or antiviral medicine to remove the cause of the disease. The disease creates inflammation and fever; hence, anti-inflammatory and febrifuge<sup>320</sup> properties are also necessary. Furthermore, in order to stop the diarrhoea, the ingredients require antispasmodic<sup>321</sup> and fibrous (bulking) qualities and lastly, in order to combat bleeding, the remedy must be astringent.<sup>322</sup>

Remedy types that occur in the texts are the following: salves, baths, smokes, diet: food and drink, herbal drinks and foods, charms, laxatives and purgatives, *strictories*, powders, electuaries, and syrups. These remedies can be roughly divided in internal remedies – foods and

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<sup>317</sup> Frances Watkins, et al, "Anglo-Saxon Pharmacopoeia Revisited: A Potential Treasure in Drug Discovery," *Drug Discovery Today* 16, no.23/24 (2011): 1069–75.

<sup>318</sup> C.W. Cheng, et al, "Efficacy of a Chinese Herbal Proprietary Medicine (Hemp Seed Pill) for Functional Constipation," *American Journal of Gastroenterology* 106, no. 1 (2011): 120–9, doi: 10.1038/ajg.2010.305; Parvin Mansouri, et al, "Review of Medicinal Remedies on Hand Eczema Based on Iranian Traditional Medicine: A Narrative Review Article," *Iran Journal of Public Health* 45, no. 8 (2016): 986–996. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5139979/>.

<sup>319</sup> Shahla Mahdizadeh, Maryam Khaleghi Ghadiri, and Ali Gorji, "Avicenna's Canon of Medicine: a Review of Analgesics and Anti-inflammatory Substances," *Avicenna Journal of Phytomedicine* 5, no. 3 (2015): 182–202, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4469963/>

<sup>320</sup> Reduces fever.

<sup>321</sup> Suppresses muscle spasms.

<sup>322</sup> Causing the contraction of skin cells and other body tissues to reduce bleeding.

drinks – and topical treatments – salves and baths. Which types would be most effective will be studied here as well.

First, herbs and ingredients both used in Old and Middle English texts will be listed. Next, the herbs only described in the Old English texts will be examined. Then, ingredients solely in the Middle English texts will be discussed. Per category, the three to five most used herbs will be discussed on the basis of modern scientific research and modern herbals.<sup>323</sup> The rest of the herbs can be found in appendix two. A conclusion about effectiveness will be drawn from the gathered information.

### *Ingredients*

#### *Old and Middle English*

Eleven herbs are used in both Old and Middle English medical texts, and these herbs are all described in modern medical research. The fact that these herbs were used during the whole Middle Ages must mean they were effective and well available. For example, parsley, fenugreek and mugwort are reported to be anti-inflammatory and antispasmodic. Moreover, both oak and lily are astringent, anti-inflammatory and antibacterial.

<b>Herbs</b>	<b>Number of remedies</b>	<b>AB</b>	<b>AS</b>	<b>AI</b>	<b>ASp</b>	<b>FE</b>	<b>FI</b>
Waybread	12	X	X	X		X	X
Yarrow	7	X	X		X		
Lily	6	X	X	X			
Mint	5	X			X		
Oak	4	X	X	X			
Rue	3	X			X		
Parsley	3			X	X		
Cinquefoil	3		X	X		X?	
Poppy	2						
Fenugreek	2			X	X		
Mugwort	2			X	X		

*Table 2: Old and Middle English Herbs*

*Legend: AB: antibiotic (bacteria, fungi, viruses), AS: astringent, AI: anti-inflammatory, ASp: antispasmodic, FE: febrifuge, FI: fibrous.*

Waybread (OE) or plantain (ME) is used twelve times in all texts. Its psyllium seeds are used as both a laxative and as bulking mucilage, nowadays employed in fibre supplements.

<sup>323</sup> PubMed, U.S. National Library of Medicine, <https://www.ncbi.nlm.nih.gov/pubmed/>; M.A. Grieve, *Modern Herbal*, (New York: Dover Publications, Inc., 1931). Unfortunately, only the online edition without page numbers was available to me, URL: <http://www.botanical.com/botanical/mgmh/mgmh.html>.

Grieve states that plantain is febrifuge, de-obstruent<sup>324</sup> and somewhat astringent: “[a]ppplied to a bleeding surface, the leaves are of some value in arresting haemorrhage, but they are useless in internal haemorrhage, although they were formerly used for bleeding [...] and dysentery.”<sup>325</sup> Furthermore, Cameron argues that plantains have antibiotic activity in all their parts (leaves, flowers, roots, seeds):<sup>326</sup> “[o]f the forty-eight remedies containing plantain in the three Leechbooks, twenty-five are for conditions where its antibiotic properties would have been of benefit.”<sup>327</sup> Additionally, modern research points out that plantain possesses “anti-ulcerative, antidiarrhoeal, anti-inflammatory, antibacterial, and antiviral agents.”<sup>328</sup> Another study concludes that “[p]lantain in salves has no inhibitory effect against bacteria.”<sup>329</sup> However, plantain is not used in any salve against dysentery. Plantain or waybread is used in medieval medical texts in an edible powder, electuary, syrup, bath, food, cake with egg whites (antibiotic), and a drink with yarrow. Hence, plantain is mostly used internally, which would be most effective for its bulking, antibiotic and anti-inflammatory qualities. In a bath, plantain would be helpful against outer haemorrhoids, but it would not be helpful against the internal bleeding of dysentery applied either internally or topically.

Yarrow is used seven times in all texts. The plant possesses antispasmodic<sup>330</sup> and prokinetic<sup>331</sup> qualities. Grieve states that yarrow is diaphoretic,<sup>332</sup> stimulant and that it stops bleeding.<sup>333</sup> The plant moreover has an inhibitory effect against some microbial organisms, such as bacteria and fungi.<sup>334</sup> Yarrow is used in a cake with plantain and in a drink with waybread and wine, thus all for internal use. Yarrow (antispasmodic, antibacterial, astringent) combined with plantain (febrifuge, bulking, anti-inflammatory) seems to be a good combination for dysentery with all necessary qualities to combat the disease.

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<sup>324</sup> Works against obstructions.

<sup>325</sup> Grieve, “Plantain,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/p/placom43.html>

<sup>326</sup> Cameron, “Anglo-Saxon Medicine and Magic,” 206.

<sup>327</sup> Cameron, “Rational Medicine,” 124.

<sup>328</sup> M.B. Adom, et al., “Chemical Constituents and Medical Benefits of *Plantago major*,” *Biomedicine Pharmacotherapy* 96 (2017): 348–360, doi: 10.1016/j.biopha.2017.09.152.

<sup>329</sup> Brennessel, Drout and Gravel, “A Reassessment of the Efficacy of Anglo-Saxon Medicine,” 194.

<sup>330</sup> R. Lemmens-Gruber, et al., “Investigation of the Spasmolytic Activity of the Flavonoid Fraction of *Achillea millefolium* s.l. on Isolated Guinea-pig Ilea,” *Arzneimittelforschung* 56, no. 8 (2006): 582–8, <https://www.ncbi.nlm.nih.gov/pubmed/17009839>

<sup>331</sup> M. Mohseni, et al., “Does *Achillea millefolium* Extracts Possess Prokinetic Effects on the Bovine Abomasum through M3 Muscarinic Receptors?” *Veterinary Research Forum* 8, no. 2 (2017): 115–120, <https://www.ncbi.nlm.nih.gov/pubmed/28785386>; stimulates bowel movement.

<sup>332</sup> Inducing sweat

<sup>333</sup> Grieve, “Yarrow,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/y/yarrow02.html>

<sup>334</sup> C. El-Kalamouni, et al., “Antioxidant and Antimicrobial Activities of the Essential Oil of *Achillea millefolium* L. Grown in France,” *Medicines* (Basel) 19, no. 4 (2017): 30–39, doi: 10.3390/medicines4020030

Mint is used five times. Grieve's *Herbal* states the antispasmodic action of peppermint oil relieves pains in the gastrointestinal track. Because of its stimulating and carminative<sup>335</sup> properties, mint is useful against dyspepsia, flatulence and other pains and cramps in the abdomen. Peppermint has received the most scientific research of all mint species for gut problems. For instance, peppermint oil is discovered to possess antispasmodic action on the gastrointestinal muscle<sup>336</sup> and shows activity against several bacteria, such as MRSA and *E. coli*.<sup>337</sup> Hence, the information above proves Grieve's assertions, with antibacterial as added property. However, doctors warn that peppermint oil should not be administered to patients with gastric or intestinal ulcers because their symptoms may be exacerbated,<sup>338</sup> although the use of the whole plant – diluted oil with water and fibre – in medieval remedies, instead of concentrated oil may have prevented this exacerbation from happening. In medieval dysentery remedies, mint is used in internal drinks with athanasia and plantain. Mint's antispasmodic and antibacterial properties combined with plantain's astringent, febrifuge and bulking qualities appear effective against dysentery with a bacterial cause.

Cinquefoil is used thrice. Grieve argues that cinquefoil is astringent, and is used against inflammation, infection and diarrhoea. All of these qualities are backed by modern research.<sup>339</sup> Cinquefoil for instance contains ellagitannin, which is an anti-inflammatory and astringent agent.<sup>340</sup> Additionally, this plant can “cool and temper the blood and humours in the body,”<sup>341</sup> which perhaps means it can fight fevers too. The plant is used together in a remedy with brooklime (see below) against diarrhoea, combining cinquefoil's anti-diarrhoeal qualities and brooklime's astringent tannins in a drink.<sup>342</sup> Cinquefoil is also employed in a drink with soothing sweet milk to combat internal inflammation.

Rue is used three times. Nowadays, rue is considered toxic: “[l]arge doses (more than 100 mL of the oil or [...] 120 g of the leaves in one dose) can cause violent gastric pain, vomiting,

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<sup>335</sup> Expulsion of gas from the stomach or bowel

<sup>336</sup> J.M. Hills and P.I. Aaronson, “The Mechanism of Action of Peppermint Oil on Gastrointestinal Smooth Muscle,” *Gastroenterology* 101, no.1 (1991): 55–65.

<sup>337</sup> K. Osawa, et al., “The Antibacterial Activities of Peppermint Oil and Green Tea Polyphenols, Alone and in Combination, against Enterohemorrhagic *Escherichia coli*,” *Biocontrol Science* 4, no. 1 (1999): 1–7.

<sup>338</sup> H.G. Grigoleit and P. Grigoleit, “Pharmacology and Preclinical Pharmacokinetics of Peppermint Oil,” *Phytomedicine* 12, no. 8 (2005): 612–616.

<sup>339</sup> D. Anheyer, et al., “Herbal Medicines for Gastrointestinal Disorders in Children and Adolescents: A Systematic Review,” *Pediatrics* 139, no. 6 (2017): 62–63, doi: 10.1542/peds.2017-0062.

<sup>340</sup> J.P. Piwowarski, et al., “Role of Human Gut Microbiota Metabolism in the Anti-inflammatory Effect of Traditionally Used Ellagitannin-rich Plant Materials,” *Journal of Ethnopharmacology* 8, no. 155 (2014): 801–9, doi: 10.1016/j.jep.2014.06.032.

<sup>341</sup> Grieve, “Cinquefoil,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/f/fivele20.html>

<sup>342</sup> Cameron, “Rational Medicine,” 127–8.

systemic complications, and death. Exposure to common rue or herbal preparations derived from it, can cause [...] burn-like blisters on the skin.”<sup>343</sup> Nevertheless, many studies also indicate the benefit of rue. One experiment found that mountain rue extract and its essential oil show promising anthelmintic<sup>344</sup> activity against gastrointestinal worms.<sup>345</sup> Antispasmodic effects of rue have similarly been observed in the gastrointestinal muscle.<sup>346</sup> Furthermore, more than fifteen compounds in rue have been identified as having antibacterial and antifungal activity.<sup>347</sup> Lastly, Grieve states in her *Modern Herbal* that rue is strongly stimulating and antispasmodic – which is supported by above research.<sup>348</sup> Cameron argues that a “remedy in *Leechbook III* [a cake] combines the antibacterial properties of plantain with the antihemorrhagic properties of rue,”<sup>349</sup> however, one should not eat too much of this cake to prevent poisoning. Rue is also used in a topical salve, although this may not be the best idea, since rue can burn the skin.

Next, the common solvents in the remedies, besides water, and their possible health effects will be examined. The solvents are mostly the same in both Old and Middle English remedies.

Firstly, wine is used nine times in the selected texts. Research shows that the antibacterial property of wine is largely responsible for its reputation as a digestive aid.<sup>350</sup> Wine is most often used in medieval medical texts as drink with herbs, such as yarrow (antibiotic, anti-inflammatory and astringent) and parsley (anti-inflammatory, antispasmodic), thus both good combinations against dysentery. Moreover, vinegar is used five times in all selected texts. Nowadays, vinegar would work as a stomach acid supplement and digestive tonic. In the medieval medical texts, vinegar is used in baths, drinks and for food to soak in. This solvent seems to work most effectively internally for dysentery, which is mostly done right here. Furthermore, honey is used four times. Modern research proves honey is highly antibacterial.

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<sup>343</sup> D. Furniss, and T. Adams, “Herb of Grace: an Unusual Cause of Phytophotodermatitis Mimicking Burn Injury,” *Journal of Burn Care Residents* 28, no. 5 (2007): 767–769.

<sup>344</sup> A group of antiparasitic drugs that expel parasitic worms (helminths) and other internal parasites from the body.

<sup>345</sup> Orty, et al., “In Vitro Anthelmintic Activity of Active Compounds of the Fringed Rue *Ruta chalepensis* against Dairy Ewe Gastrointestinal Nematodes,” *Journal of Helminthology* 22 (2016): 1–7.

<sup>346</sup> E. Minker, et al., “Effect of Secondary Substances Isolated from the *Ruta graveolens* L. on the Coronary Smooth Muscle,” *Acta Pharmaceutica Hungarica* 50, no. 1 (1980): 7–11.

<sup>347</sup> B. Wolters and U. Eilert, “Antimicrobial Substances in Callus Cultures of *Ruta graveolens*,” *Planta Medica* 43, no. 2 (1981): 166–174.

<sup>348</sup> Grieve, “Rue,” in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/r/rue---20.html>.

<sup>349</sup> Cameron, “Rational Medicine,” 124–126.

<sup>350</sup> Martin E. Weisse, Eberly Bardwell and Donald A. Person, “Wine as a Digestive Aid: Comparative Antimicrobial Effects of Bismuth Salicylate and Red and White Wine,” *BMJ* 311 (1995): 1657–60.



One study shows the successful use of honey for treating the *Helicobacter pylori* bacteria, which causes gastric ulcers,<sup>351</sup> as well as killing a variety of pathogenic bacteria, such as the *Streptococcus* species.<sup>352</sup> In the medieval medical texts, honey is used in gruels and in a drink made of cheese, honey, and milk, in which the honey can kill the bad milk bacteria and the bad dysentery bacteria. Lastly, rose water (used thrice) is astringent according to Grieve. The herbalist Culpepper makes a Damask red rose syrup by soaking the petals for a day in water, straining the liquid and adding sugar to it.<sup>353</sup> This syrup is great for constipated people and looks similar to a rose syrup in Gilbertus' *Compendium*, although the latter one is for dysentery and not for constipation.

Dietary measures are also often similar in Old and Middle English texts. Both Old and Middle English medical texts describe meat (sometimes of a specified animal), cheese, and wheat or other grains as helpful. Wheat is often used in herbal remedies as well. These foods can be said to be wholesome, containing many nutrients and proteins to strengthen a weak patient. Additionally, two texts use eggs: “[e]gg white contains the enzyme lysozyme which breaks down bacterial cell walls and could have been responsible for the observed antimicrobial effect.”<sup>354</sup> One remedy combines egg whites with plantain,<sup>355</sup> which is also antibiotic, for a powerful bacteria killer. Lastly, often the use of salt and sugar is specified in dietary remedies, which are both ingredients of an oral rehydration drink for diarrhoea. The dietary measures are thus also carefully selected for dysentery patients.

As one can see, all of the eleven herbs used in both Old and Middle English texts as well as the solvents and foods are extremely potent, containing multiple properties to combat dysentery. These effective ingredients are combined with each other in powerful, internal remedies. This shows ingredients from Old English texts which would have proven to be effective were copied again in Middle English texts.

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<sup>351</sup> N. al Somal, et al., “Susceptibility of *Helicobacter pylori* to the Antibacterial Activity of Manuka Honey,” *Journal of the Royal Society of Medicine* 87, no. 1 (1994): 9–12.

<sup>352</sup> R. Cooper, et al., “Antibacterial Activity of Honey against Strains of *Staphylococcus aureus* from Infected Wounds,” *Journal of the Royal Society of Medicine* 92, no. 6 (1999): 283–85.

<sup>353</sup> Grieve, “Rose,” <http://www.botanical.com/botanical/mgmh/r/roses-18.html>

<sup>354</sup> Brennessel, Drout and Gravel, “A Reassessment of the Efficacy of Anglo-Saxon Medicine,” 194.

<sup>355</sup> Appendix 1, remedy 52.

*Old English*

In the Old English medical texts, seventeen herbs are used exclusively, of which seven are from the *Herbarium*. Medical research describes thirteen of these herbs. The other four; wild thyme, laver, pale stonecrop, and tunsing wort; were not found in medical studies or were not found to possess effective qualities against dysentery, therefore those herbs are not included here. The fact that these seventeen herbs were not used for dysentery anymore after the year 1000 must mean they were somehow ineffective or not well available. Many of the herbs, such as brooklime, bramble, everlasting, knotgrass and woodruff, possess astringent qualities, because of their plant tannins. These herbs would thus be useful internally to stop the bleeding in the intestines. Others are antibiotic, such as lupin, pennyroyal and centaury; and anti-inflammatory, such as mallow and orpine.

Herbs	Number of remedies	AB	AS	AI	ASp	FE	FI
Brooklime	3		X				
Garlic	1	X					X
Pepper	1					X	
Horsetail	1	X		X			
Bramble	1		X				
Everlasting	1		X				
Knotgrass	1		X				
Woodruff	1		X				
Lupin,	1	X					X
Pennyroyal	1	X					
Centaury	1	X					
Mallow	1			X			
Orpine	1			X			

Table 3: Old English Herbs

Some of the ingredients have shown to be extraordinarily potent against various symptoms of dysentery. Brooklime, for example, is a native European herb used three times in two Old English texts, all in internal remedies. According to Grieve, brooklime is a diuretic.<sup>356</sup> The plant contains tannins, providing its astringent qualities.<sup>357</sup> Thus, brooklime halts the bowel's bleeding and simultaneously removes excess water from the intestines. In the *Leechbook III*, brooklime is used in a drink together with lupin (anthelmintic,<sup>358</sup> diuretic,<sup>359</sup>

<sup>356</sup> Increase the excretion of urine.

<sup>357</sup> Grieve, "Brooklime," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/b/brookl69.html>.

<sup>358</sup> Destroying parasitic worms.

<sup>359</sup> Grieve, "Lupin," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/l/lupins50.html>

antifungal,<sup>360</sup> high protein), centaury (aromatic bitter, stomachic,<sup>361</sup> antibacterial and antifungal activity<sup>362</sup>) and cinquefoil (anti-inflammatory,<sup>363</sup> against diarrhoea<sup>364</sup>). These herbs are therefore a great combination for dysentery with all kinds of causes – worms, fungi or bacteria.

The remaining twelve herbs are only mentioned in one remedy in the Old English texts. Garlic and pepper are best known to the modern readers of these herbs and therefore are most frequently studied in medical research.

Garlic prevents the growth of the *Helicobacter pylori* bacteria which causes gastric ulcers and has also been associated with stomach cancer.<sup>365</sup> The plant is antiviral, antibacterial, and antifungal, especially in its raw state: “[g]arlic juice [...] inhibits the growth of species of staphylococcus and of several other kinds of bacteria.”<sup>366</sup> This plant also contains prebiotic fibre, which is good for the bowel’s microbiota, which decreases from intestinal diseases. Although garlic is shown to work effectively internally in medical research; in the Old English texts, this plant is only used once in a topical salve with rue, which is not the best topical herb (see above).

Pepper is stimulant and carminative. Additionally, this spice is said to possess febrifuge properties. Pepper’s stimulant action is especially noteworthy on the mucous membrane of the rectum, where the spice is good for constipation and flatulence, and aids digestion.<sup>367</sup> Similar to garlic, pepper is used only in a salve with brimstone (sulphur: antibacterial) on the belly.

One of the three herbs from the *Herbarium* found in medical research, horsetail, contains silica, providing its anti-inflammatory properties.<sup>368</sup> The parts of the horsetail above ground have been used to treat inflammation and diarrhoea in traditional medicine.<sup>369</sup> The plant

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<sup>360</sup> T.C. Confortin, et al., “Extracts from *Lupinus albescens*: Antioxidant Power and Antifungal Activity in vitro against Phytopathogenic Fungi,” *Environmental Technology* 29 (2018): 1–8, doi: 10.1080/09593330.2018.1427800.

<sup>361</sup> Promoting the appetite or assisting digestion.

<sup>362</sup> B. Siler, et al., “Centauries as Underestimated Food Additives: Antioxidant and Antimicrobial Potential,” *Food Chemistry* 15, no. 147 (2014): 367–76, doi: 10.1016/j.foodchem.2013.10.007.

<sup>363</sup> Piwowarski, et al., “Role of Human Gut Microbiota Metabolism in the Anti-inflammatory Effect of Traditionally Used Ellagitannin-rich Plant Materials,” 801–9.

<sup>364</sup> Anheyer, et al., “Herbal Medicines for Gastrointestinal Disorders in Children and Adolescents: A Systematic Review,” 62–63.

<sup>365</sup> G.P. Sivam, “Protection against *Helicobacter pylori* and Other Bacterial Infections by Garlic,” *Journal of Nutrition* 131 (2001): 1106–1108.

<sup>366</sup> Cameron, “Anglo-Saxon Medicine and Magic,” 202.

<sup>367</sup> Grieve, “Pepper,” in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/p/pepper24.html>

<sup>368</sup> C. Steinborn, et al., “In Vitro Anti-inflammatory Effects of *Equisetum arvense* Are Not Solely Mediated by Silica,” *Planta Medica* 4 (2017): 519–526, doi: 10.1055/s-0043-123075.

<sup>369</sup> Grieve, “Horsetails,” in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/h/hortai39.html>

possesses antimicrobial and antioxidant activity,<sup>370</sup> and works against biofilms of the fungus *Candida albicans*.<sup>371</sup> The *Herbarium* does not say what kind of remedy is made with this herb.

The Old English texts do not contain many ingredients other than the foods and solvents used in both Old and Middle English texts. The texts mention pitch and wax, which could function as lubricant in the intestines, as well as brimstone, which is sulphur, an antibacterial and antifungal agent.<sup>372</sup>

Brooklime's internal use is probably the most effective of the four Old English plants mentioned above. Garlic's antibiotic properties will not cross the skin in a salve and pepper on the belly will not enter mucous membrane inside where the spice is most effective. Pepper salve nevertheless may still possess its fever-reducing properties. Horsetail's application is unknown, but its anti-inflammatory and antibiotic qualities would work best internally.

The fact that these herbs are unique to Old English dysentery remedies means they were not used anymore later in the Middle Ages. Garlic is used internally in other intestinal remedies in *Bald's Leechbook* and in other remedies in Gilbertus' text, for example, for tooth ache. However, the topical use of garlic for dysentery seems to be ineffective and was not copied in later medieval medical texts. Pepper is used in Gilbertus' text internally for stomach ache, which seems better than in a salve. Why brooklime is not used anymore in Middle English texts is a mystery, since it seems to work well and is native to England. Most of the *Herbarium* herbs are not mentioned anywhere else in medieval medical texts, even though many are native to England, nor are they mentioned in medical research. They thus must not be that effective.

### *Middle English*

Twenty-three herbs are used exclusively in Middle English medical texts. Twenty of these herbs are found in modern medical research. The other three; athanasia, common teasel, and restharrow; were not found in medical studies, so those herbs are not included here. The fact that these twenty-three herbs were only used after the year 1000 for dysentery must mean they were not available before. As stated in chapter two, the Middle English *Compendium* uses many

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<sup>370</sup> M. Yeganegi, et al., "Equisetum telmateia Extracts: Chemical Compositions, Antioxidant Activity and Antimicrobial Effect on the Growth of some Pathogenic Strain Causing Poisoning and Infection," *Journal of Microbiology and Pathology* 116 (2018): 62–67, doi: 10.1016/j.micpath.2018.01.014.

<sup>371</sup> N.L.M. Almeida, et al., "Antimicrobial Activity of Denture Adhesive Associated with Equisetum giganteum- and Punica granatum-enriched Fractions against *Candida albicans* Biofilms on Acrylic Resin Surfaces," *Biofouling* 34, no. 1 (2018): 62–73, doi: 10.1080/08927014.2017.1407408.

<sup>372</sup> A.K. Gupta and K. Nicol, "The Use of Sulfur in Dermatology," *Journal of Drugs in Dermatology* 3, no. 4 (2004): 427–31.

new Arabic ingredients, which explains why they were not used before. The majority of the exclusive herbs are found in Gilbertus' more theoretical *Compendium*.

Several of the Middle English herbs combine anti-inflammatory and antibiotic qualities, which could be very helpful in dysentery, such as acacia, daisy (only used in bath), *bdellie* (used in salve), shepherd's purse (in bath), nutmeg, and mirabolani. As one can see, three of these herbs are only used topically, which is probably less effective for their properties. Moreover, tragacanth gum from the *Astragalus* tree and incense are both antibacterial and antifungal ingredients.

Herbs	Number of remedies	AB	AS	AI	ASp	FE	FI
Mastic	4	X					
Mirabolani	4	X		X			
Cress	3						
Myrtle	3	X					
Lovage	2	X				X	
Sumac	2	X	X	X			
Pomegranate	2	X	X			X	
Cinnamon	2	X	X				
Incense	2	X					
Acacia	1	X		X			
Daisy	1	X		X			
Bdellie	1	X		X			
Shepherd's purse	1	X		X			
Nutmeg	1	X		X			
Tragacanth	1	X					
Camomile	1	X		X	X		
Cloves	1	X					
Cytinus hypocistis	1	X	X				
Wormwood	1	X					
Comfrey	1		X				

Table 4: Middle English Herbs

Mastic is used four times in Gilbertus' text. Mastic is the chewable resin from the mastic tree. The resin has antibacterial and antifungal properties<sup>373</sup> and can cure peptic ulcers by killing *Helicobacter pylori* bacteria.<sup>374</sup> Grieve moreover states the resin is a stimulant and diuretic.<sup>375</sup> In the *Compendium*, mastic is used in complex and internal remedies, such as in a purgative and electuary for weak patients, a drink with gum, and an excellently-combined *strictory* with

<sup>373</sup> Christos Bellos, *Mastiha Island* (Athens: Ellinika Gramatta Press, 2005): 212–13.

<sup>374</sup> F.U. Huwez, et al., "Mastic Gum Kills *Helicobacter pylori*," *New England Journal of Medicine* 339, no. 26 (1998): 1946.

<sup>375</sup> Grieve, "Mastic," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/m/mastic23.html>

wheat (bulking), milk (soothing), *sandragon* (lily: astringent, anti-inflammatory and antibacterial) and gall (antibacterial). Mastic contains many carbohydrates, similar to gum, which is good for a weak patient. Since mastic kills ulcers and bacteria inside the body and can remove excess water from the body, its internal use is recommended, which is done right in Gilbertus' text.

Pomegranate is used two times in Gilbertus' text. This plant is still seen as effective in modern times: “[s]everal studies have demonstrated the antimicrobial, anthelmintic, and antioxidant potential of the active ingredients of pomegranate extracts, suggesting their preventive and curative role in several gastrointestinal disorders.”<sup>376</sup> Additionally, pomegranate shows antibacterial activity against strains of food-borne pathogenic bacteria.<sup>377</sup> The various parts of the pomegranate tree possess different qualities. In the *Compendium*, the bark and flowers are used, which are, respectively, astringent and anthelmintic, and febrifuge.<sup>378</sup> In the *Compendium*, pomegranate parts are used together (*balaustie*:<sup>379</sup> febrifuge, *psidie*:<sup>380</sup> astringent, both: antibacterial) in one consumable powder with incense (antibacterial), mummy (desiccant), cinquefoil (anti-inflammatory, anti-diarrhoeal) *sandragon* (lily: astringent, anti-inflammatory and antibacterial), cinnamon (astringent) and nutmeg (antibacterial, anti-inflammatory). Here, one can spot various different qualities in one powder against dysentery.

Cinnamon is used two times in Gilbertus' text. This spice is astringent, antiseptic and works powerfully as a local stimulant. Cinnamon stops vomiting, relieves flatulence, and taken with astringents is useful in diarrhoea and haemorrhages.<sup>381</sup> Furthermore, the essential oil has antifungal<sup>382</sup> and antibacterial<sup>383</sup> effects. In the *Compendium*, cinnamon is used in a broth with

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<sup>376</sup> R. Shaoul, et al., “Effect of Pomegranate Juice on Intestinal Recovery Following Methotrexate-Induced Intestinal Damage in a Rat Model,” *Journal of American College Nutrition* 13 (2018): 1–9, doi: 10.1080/07315724.2017.1413961.

<sup>377</sup> A.A. Mostafa, et al., “Antimicrobial Activity of some Plant Extracts against Bacterial Strains Causing Food Poisoning Diseases,” *Saudi Journal of Biological Science* 25, no. 2 (2018): 361–366, doi: 10.1016/j.sjbs.2017.02.004.

<sup>378</sup> Grieve, “Pomegranate,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/p/pomegr60.html>

<sup>379</sup> Flower of pomegranate tree

<sup>380</sup> Bark of pomegranate tree

<sup>381</sup> Grieve, “Cinnamon,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/c/cinnam69.html#med>

<sup>382</sup> S. Farisa Banu, et al., “Effects of Patchouli and Cinnamon Essential Oils on Biofilm and Hyphae Formation by *Candida* Species,” *Journal of Mycology Medicine* 20 (2018): 332–339, doi: 10.1016/j.mycmed.2018.02.012.

<sup>383</sup> M.S. Hossan, et al., “Antibacterial Effects of 18 Medicinal Plants Used by the Khyang Tribe in Bangladesh,” *Pharmacology and Biology* 56, no. 1 (2018): 201–208, doi: 10.1080/13880209.2018.1446030; V. Vijayan, and A. Mazumder, “In Vitro Inhibition of Food Borne Mutagens Induced Mutagenicity by Cinnamon (*Cinnamomum cassia*) Bark Extract,” *Drug and Chemical Toxicology* 26 (2018): 1–9, doi: 10.1080/01480545.2018.1439056.

cloves (also a stimulant) and an edible powder (see pomegranate). Its properties are useful in internal remedies and is thus used the right way.

Myrtle is used one time in a dysentery recipe and named twice in a remedy as a substitution for another ingredient. Myrtle essential oil possesses antibacterial activity against salmonella<sup>384</sup> and antifungal activity,<sup>385</sup> and can improve bleeding and pain due to haemorrhoids.<sup>386</sup> The plant is therefore effective in the treatment of digestive diseases.<sup>387</sup> In the *Compendium*, myrtle is used in a syrup to drink and in the longest remedy to eat. Its antibacterial and antifungal quality would be useful internally, but the cessation of haemorrhoid bleeding and pain would be of more value topically. Perhaps myrtle works both internally and topically.

Comfrey is used topically in both medieval and modern medicine to relieve pain and inflammation.<sup>388</sup> Grieve states comfrey is emulgent,<sup>389</sup> mildly astringent and expectorant.<sup>390</sup> Because the plant contains much mucilage, it has been used like marshmallow for its gentle emollient<sup>391</sup> action in intestinal problems.<sup>392</sup> In the *Compendium*, comfrey is only used in a bath with roses, plantain (antibiotic), daisies (anti-inflammatory,<sup>393</sup> antimicrobial<sup>394</sup>), oak rind

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<sup>384</sup> M. Fadi, et al., “Combined Treatment of *Thymus vulgaris* L., *Rosmarinus officinalis* L. and *Myrtus communis* L. Essential Oils against *Salmonella typhimurium*,” *European Journal of Pharmacology and Biopharmacology* 126 (2018): 211–220, doi: 10.1016/j.ejpb.2017.06.002.

<sup>385</sup> A. Barac, et al., “Antifungal Activity of *Myrtus communis* against *Malassezia* sp. Isolated from the Skin of Patients with Pityriasis Versicolor,” *Infection* 46, no. 2 (2018): 253–257, doi: 10.1007/s15010-017-1102-4

<sup>386</sup> M. Mahboubi, “Effectiveness of *Myrtus communis* in the Treatment of Haemorrhoids,” *Journal of Integral Medicine* 15, no. 5 (2017): 351–358, doi: 10.1016/S2095-4964(17)60340-6.

<sup>387</sup> M.A. Jabri, L. Marzouki, and H. Sebai, “Ethnobotanical, Phytochemical and Therapeutic Effects of *Myrtus communis* L. Berries Seeds on Gastrointestinal Tract Diseases: a Review,” *Archives of Physiology and Biochemistry* 5 (2018): 1–7, doi: 10.1080/13813455.2017.1423504

<sup>388</sup> C. Staiger, “Comfrey Root: from Tradition to Modern Clinical Trials,” *Wien Medische Wochenschrifte* 163, no. 3–4 (2013): 58–64, doi: 10.1007/s10354-012-0162-4.

<sup>389</sup> Stimulates flow of bile or urine.

<sup>390</sup> Helps eject mucus.

<sup>391</sup> Soothing and softening.

<sup>392</sup> Grieve, “Comfrey,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/c/comfre92.html>

<sup>393</sup> Grieve, “Daisy,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/d/daisyc03.html>

<sup>394</sup> P. Avato, et al., “Antimicrobial Activity of Polyacetylenes from *Bellis perennis* and their Synthetic Derivatives,” *Planta Medica* 63, no. 6 (1997): 503–7, <https://www.ncbi.nlm.nih.gov/pubmed/9434600>; N. Kavalcioglu, et al., “Biological Activities of *Bellis perennis* Volatiles and Extracts,” *Natural Product Communications* 5, no. 1 (2010): 147–50, <https://www.ncbi.nlm.nih.gov/pubmed/20184041>.

(astringent, antiseptic,<sup>395</sup> antibacterial,<sup>396</sup> and anti-inflammatory<sup>397</sup>) and vinegar (acid), which can be effective for inflammation, pain and blood in the rectum, but not for upper gut dysentery.

In the *Liber*, *MS Rawlinson* and *MS Rylands*, cress is used three times in a prognosis, which instructs to give the patient a pennyweight of garden cress seeds and red wine or water for three days. This plant does not necessarily possess medicinal qualities, but it is nutritive. The prognosis should thus not be used on its own without other medicine, since the patient will probably die then.

The Middle English texts, and again mostly Gilbertus, use several hard to categorise ingredients. Clay is mentioned four times, for example in an electuary for a weak patient, and is used as a purifier together with sugar and mastic (carbs), amachite (iron) and lily (astringent, anti-inflammatory and antibacterial). With this electuary, the patient is cured and strengthened at the same time. Furthermore, gum from the Acacia senegal tree is used three times. Gum acacia is a demulcent<sup>398</sup> and its mucilage covers inflamed surfaces.<sup>399</sup> Gum in a drink with, for instance, mastic therefore works anti-inflammatorily. Next, spodium powder from calcination and mummy can both be considered bone powder, which is a desiccant.<sup>400</sup> These ingredients could also be related to the Old English swine claw remedy.<sup>401</sup> Spodium, mummy and swine claw could help against diarrhoea by drying out the intestines. Moreover, amachite is a red hematite, containing iron oxide. This ingredient could restore the iron balance after blood loss. Iron was also used by Pliny in a treatment for dysentery, which was then often thought to be a wound of the intestines: “[f]or many disorders, but especially for those suffering from dysentery, water is heated with red-hot iron.” *Bald’s Leechbook* contains a similar treatment comprising coriander, wine and a glowing hot iron for broken intestines.<sup>402</sup>

Hart’s horn powder in water was used to treat diarrhoea. The coal of hart’s horn, called calcinated hart’s horn, was employed as an absorbent in the treatment of dysentery. The ashes

<sup>395</sup> Grieve, “Oak,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/o/oakcom01.html>

<sup>396</sup> J. Hubert, et al, “In Vitro Dermo-Cosmetic Evaluation of Bark Extracts from Common Temperate Trees,” *Planta Medica* 82, no. 15 (2016): 1351–1358, <https://www.ncbi.nlm.nih.gov/pubmed/27352384>; A.A Tolmacheva, E.A. Rogozhin, and D.G .Deryabin, “Antibacterial and Quorum Sensing Regulatory Activities of some Traditional Eastern-European Medicinal Plants,” *Acta Pharmaceutica* 64, no. 2 (2014): 173–86, doi: 10.2478/acph-2014-0019.

<sup>397</sup> Piwowarski, et al, “Role of Human Gut Microbiota Metabolism in the Anti-inflammatory Effect of Traditionally Used Ellagitannin-rich Plant Materials,” 801–9.

<sup>398</sup> Soothing.

<sup>399</sup> Grieve, “Acacia,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/a/acaci006.html>

<sup>400</sup> Dries out.

<sup>401</sup> Appendix 1, remedy 10.

<sup>402</sup> Cameron, “Rational Medicine,” 126.



of hart's horn, in the *Liber* served in a drink, were a common source of ammonium salts.<sup>403</sup> Perhaps this ammonium salt would work similarly to ammonium chloride. *Bole armoniac* or ammonium chloride is an expectorant, which may induce nausea and vomiting, and thus could be helpful as purgative. Yet, this ingredient is used in a salve in the *Compendium*, and therefore not very effectively utilised.

Gall (used three times) has a “slight inhibitory effect on *E. coli*. However, it should not be considered to be anti-bacterial [in a salve].”<sup>404</sup> Nevertheless, Cameron states that “[b]ull’s gall, still in the pharmacopoeia as oxgall, has detergent properties which makes it an effective agent against many bacteria, especially Gram-positive ones such as the staphylococci.”<sup>405</sup> Gall is used in a *strictory* for in the lower bowel, which could be effective against bacterial dysentery, and in a (topical) bath, which would not be effective. Of these new hard to categorise ingredients from Gilbertus’ text, not all are new to England. Gall and clay must have already existed in Anglo-Saxon England, but were not used against dysentery. Amachite, Acacia senegal, ammonium chloride and mummy on the other hand are (most likely) from the Mediterranean area.

The newly used herbs and ingredients of Gilbertus appear to possess many effective properties. Fourteen of the twenty studied herbs are used internally, which is effective for their qualities, while comfrey should be used topically to relieve pain, which is done the right way. Additionally, different parts of pomegranate tree are used in a remedy for different purposes, which strengthens the remedy’s efficacy. The herbs above are combined with other useful plants and herbs for maximum effectiveness. The other unique Middle English ingredients seem to be effective as well against dysentery in their combined remedies.

### *Conclusion*

Forty-four herbs from the fifty-one total used in the medieval remedies are proven in modern medical research to be effective against some aspect(s) of dysentery. Similarly, several other ingredients, such as foods and drinks, can be argued to be effective (often without scientific proof). Similar to the conclusion of the previous chapter, there is not much difference between Old and Middle English texts in terms of how effective the ingredients are, but there is a difference in the number of effective ingredients. The Old English ingredients have a seventy-

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<sup>403</sup> Cameron, “Anglo-Saxon Medicine and Magic,” 198.

<sup>404</sup> Brennessel, Drout and Gravel, “A Reassessment of the Efficacy of Anglo-Saxon Medicine,” 194.

<sup>405</sup> Cameron, “Anglo-Saxon Medicine and Magic,” 202.

six percent effectivity, the Middle English eighty-six, and those occurring in texts from both time periods one hundred percent effectivity. The Middle English Gilbertus contains the most unique useful herbs (nineteen) and ingredients (ten), most of which are of Arabic or Mediterranean origin, while the other Middle English texts only have one in total. Here, one can perceive the difference between practical and more theoretical texts. In the Old English texts, the origin of the thirteen unique useful ingredients is more spread out over the various texts. The *Herbarium* contains the most unique herbs of the Old English texts, but half of them are not found in medical research or are not found to possess effective properties against dysentery. Eleven of the most effective herbs and ten other effective ingredients are mentioned both in Old and Middle English texts, which all contain several properties useful against dysentery.

Most of the medical research studies the internal application of the herbs, while at least ten of the eighty-five recipes are meant to create salves, baths and smokes – thus for topical use. Since the bacteria, inflammation and bleeding occur on the inside of the body, one can assume that topical remedies would not have a large effect on dysentery, except for soothing purposes, although, perhaps antibacterial smoke blown into the belly via the rectum could still help. Especially the more theoretical *Bald's Leechbook* and the *Compendium* contain many topical remedies, decreasing their ingredients' effectivity. Other medieval cures are also not used anymore for dysentery in modern times. As with bloodletting, laxatives could weaken the patient, but perhaps it could help remove the (then unknown) bacteria from the bowels. After the use of a laxative, a *strictory* could help stop the diarrhoea again.

Of the Old English herbs, garlic and pepper would probably not be that effective in a salve against dysentery, since their antibacterial properties only work inside the body; while brooklime's astringent properties are rightly employed internally. Of the nine Old English herbs with a known application, five are used internally. The four others would also work best internally, but are unfortunately used topically. In Gilbertus' *Compendium*, powerful ingredients are used more internally, such as mastic, pomegranate and cinnamon, where they could work against dysentery. Of the twenty Middle English herbs with a known application, thirteen are used effectively in internal remedies. The seven others herbs which are only used topically, could also or more effectively be used internally. The eleven herbs mentioned both in Old and Middle English texts are all used effectively internally and thus have the best application.

The herbs plantain, yarrow and cinquefoil are used the most times in all texts, twenty-one times in total, which possess all qualities needed to heal dysentery: antibiotic, anti-inflammatory and astringent. Additionally, cinquefoil helps against fevers, yarrow is antispasmodic and plantain has bulking fibre. In Gilbertus' text, a bread made of yarrow and plantain is prescribed, and in two Middle English texts, a drink of yarrow and waybread (plantain) with white wine or ale is mentioned. Similarly, *MS Rylands* contains a cake of smashed yarrow and waybread with wheatflower juice. These two potent herbs are therefore often combined in edible remedies, demonstrating that medieval physicians understood the power of this combination against dysentery.

Hence, the herbs with the most effective properties and application from Old English texts were named again in Middle English texts in powerful, internal remedies. Why invent new recipes or use new herbs when the old ones would work? As Cameron states: "I have given enough examples to show that [Old English] medicines, even when not influenced by more advanced Mediterranean practices, were often rationally conceived and should have contributed to the well-being of the patient."<sup>406</sup> Even though the recipes sometimes seem strange and ineffective in modern eyes, Anglo-Saxonist Joseph Payne is right when he mentions the fact that "[Anglo-Saxons] tried to understand [nature and science] at all is a proof of their wisdom, not of their folly,"<sup>407</sup> which is of course applicable to later medieval people as well.

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<sup>406</sup> Cameron, "Rational Medicine," 129.

<sup>407</sup> Quoted in Cameron, "Anglo-Saxon Medicine and Magic," 215.



## CONCLUSION

This thesis entailed a comparison of the diagnosis, prognosis and treatment of dysentery in Old English and Middle English medical texts, as well as an analysis of the various remedies' effectiveness against this disease. The methodology consisted of a comparative analysis between early and late medieval medical texts, in the light of relevant scholarship on medieval medicine and modern medical research, based on close readings of these texts.

The first chapter provided a historical overview of ancient and medieval medicine, medical manuscripts and practice, as well as information about dysentery. It also presented a number of scholarly debates, which were discussed in the next chapter on the basis of the selected medical texts. The second chapter analysed Old and Middle English medical writings on dysentery in the light of two scholarly claims in the field of medieval medicine. Firstly, scholars have argued that later medieval texts contained more theory influenced by Arabic medicine from Salerno.<sup>408</sup> This consensus proved not to be true for most selected texts. Only the Middle English *Compendium* contained more theory than its Old English predecessors. However, a large part of the *Compendium*'s theory, which was not Arabic theory, was removed in its Middle English translation.

Secondly, it is thought that vernacular texts often emphasised the practical side of medicine while lacking a theoretical part. Alonso Almeida therefore distinguished between popular remedy texts and learned treatises.<sup>409</sup> In this selection of vernacular medical texts, one could differentiate between practical and more theoretical texts, both based on Greek theories. Not one text was purely academic without recipes or purely popular without any underlying theory. The more theoretical works of Bald and Gilbertus resembled each other in causes, explanation and several remedies, although the *Compendium* was clearly more extensive, even in its Middle English translation. As such, Gilbertus' text did show some improvement in theory, but this was not reflected in other Middle English texts, which only contained similar remedies without explicit theoretical parts or many new ingredients and practices. Also researched was the difference between magical and rational treatments. Contrary to the Old English texts, the Middle English texts did not have magical remedies, which might be said to be an improvement in rational medicine. The selected texts also possessed some shared

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<sup>408</sup> Burnett, "The Introduction of Scientific Texts into Britain," 451; Glick et al., *Medieval Science, Technology, and Medicine*, 337–38; Riddle, "Theory and Practice," 183.

<sup>409</sup> Alonso Almeida, *A Middle English Medical Remedy Book*, 34–35; Siraisi, *Medieval & Early Renaissance Medicine*, 52.

characteristics, such as confusion about the name for dysentery, frequent copying and a lack of measurements in the recipes. There was thus less difference between Old and Middle English texts in the selected texts from this thesis than is stated in scholarly research. Why the difference between this thesis and scholarly research exists is unclear. Perhaps it was because of the nature of the case study. Old English ingredients and remedies for dysentery were mostly already effective, so perhaps less (Arabic) innovation was needed.

The third chapter endeavoured to refute the theory that medieval medicine would be ineffective against illnesses, because it was based on non-medical or magical knowledge.<sup>410</sup> This study questioned whether late medieval dysentery recipes might have been more effective than earlier ones, according to modern medical research. A positive outcome would support the idea that medical knowledge has improved throughout the Middle Ages. This hypothesis of increased effectiveness turned out not to be fully true. The outcome of this hypothesis was not very surprising, since knowledge and theories about dysentery also did not change much over the course of the Middle Ages in the selected texts. Although the Middle English ingredients were larger in number and were relatively more often effective than Old English ingredients; the most effective herbs, solvents and foods occurred in both Old and Middle English recipes, demonstrating that the most useful ingredients were adopted again by later books. The unique Old and Middle English herbs often possessed useful properties as well, yet several of these were only used topically, which was less effective than internal use in the majority of the cases. As for the difference between ingredients in practical and more theoretical books, this distinction was best seen in the Middle English texts. The *Compendium* possessed the majority of the unique herbs and ingredients, while the rest of the practical texts contained only one unique herb. This distinction was less clear in Old English texts.

The results of this research were quite surprising, because they disagreed with the hypotheses based on general research of medieval medicine. The diagnosis, prognosis and treatment of dysentery did not change much during the course of the Middle Ages, similar to the ingredients' effectiveness. Perhaps, if this selection had included Latin medical treatises or if this thesis had analysed more texts, the results might have looked more like those in chapter one. Because only ten texts could be analysed, the study was not all-inclusive and thus might not have been fully representative. The lack of Latin texts, which was the most used language for medicine, reinforces this idea. The Middle English medical texts mostly contained the same

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<sup>410</sup> Singer, *From Magic to Science: Essays on the Scientific Twilight*, 133–167.

information, which questions whether the majority of the Middle English texts were similar, or just those in this selection. The diverse Old English texts appear to have been a better selection for research.

During this research, the lack of information about dysentery in the Middle Ages was disappointing. This lack also hindered the literature research, although enough was to be found on general medieval medicine. Nevertheless, a large overview study on dysentery with medical information, city records, etcetera, would have been useful. The same goes for the efficacy of later medieval medicine, which has not been researched. There is thus enough left to study about medieval medicine and diseases, especially dysentery.





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## APPENDIX 1: REMEDIES FROM CHAPTER 2

In this appendix, all the remedies from chapter two will be provided in their direct modern English translation, or, if too archaic or long, a paraphrasing. The list is divided first per time period and then per medical text.

### *Old English Medical Texts*

#### *Leechbook II*

##### *Book XXXII:*<sup>411</sup>

For various diseases in the belly.

1. Start with fasting.
2. Put wine and oil on the breast, and poultices of roses and barley meal, mingled with wine, and soaked in honey, and gathered up with oil in a mortar to put on the belly.
3. Bloodletting with a cupping glass (if the patient is strong: from the inner arm).
4. Salve of brimstone, black pepper, oil and wax.
5. Salve of rue in oil, add parsley, if you have it, and roots of rushes, and poppy; after all is soaked, then add wax to the oil.
6. Salve: a burned goat's liver, and rubbed somewhat small, and laid on the belly.
7. Salve: Take three garlic heads, two handfuls of green rue,<sup>412</sup> four pints of oil, or as much as seems good. Beat the herbs, rub them together, and strain. Add to the oil a pound of clean butter, four and a half ounces of clear pitch<sup>413</sup> and three ounces of clean wax. Spread this on the belly.
8. If the discharge is windy, watery, and bloody; let one foment the back gut on the gang stool, with fenugreek and marshmallow; some smoke and foment with pitch; some work brews from rye meal, and cookings with salt; some chew pennyroyal and lay it on the navel.
9. Salt water baths.

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<sup>411</sup> Cockayne, "Leechbook II," 233–237.

<sup>412</sup> "This plant has the effect also of dispelling crudities, flatulency, and inveterate pains of the stomach [...] for which purpose it is applied as a liniment, with honey, to the whole of the abdomen and chest."

Pliny, *The Natural History*, book xx, ch. 51.

<sup>413</sup> A sticky, gummy substance secreted by trees; sap.

10. Drink: put into sharp wine a swine's claw, burned and rubbed to dust.<sup>414</sup>

*Book LVI*:<sup>415</sup>

Dietary cures:

11. Non-laxative meat.
12. Juice of colewort.
13. Pea broth.
14. Vinegar.
15. Leek soaked with waybread.
16. Old cheese soaked in goat's milk or fat.
17. Cheese and dry bread (both roasted).
18. Rose water.
19. Sharp wine.
20. Gruel with barley or wheat and honey.

*Book LXV* (mix of diseases):<sup>416</sup>

21: Charm: Select a bramble<sup>417</sup> with both ends in the ground, take the newer root, and place nine chips of it in the left hand. Sing three times *Misere mei, deus*<sup>418</sup> and nine times *Pater noster*. Then, combine mugwort, everlasting and the chips, and boil it in milk until it turns red. Give this to drink up to three times.

22. Take half of a non-fat cheese and four parts honey, and boil it. Then put a handful of young oak rind (only the chips) in cow's milk with three parts honey. Let the patient drink this with the cheese, but do not let him consume ale.

*Leechbook III*:<sup>419</sup>

23. Combine cinquefoil,<sup>420</sup> brooklime,<sup>421</sup> centaury,<sup>422</sup> and lupin; pound the roots, and boil them in milk. Let the patient drink it warm in the morning and evening.

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<sup>414</sup> Cockayne, "Leechbook II," 233–4.

<sup>415</sup> *Ibid.*, 277.

<sup>416</sup> *Ibid.*, 291.

<sup>417</sup> Any rough (usually wild) tangled prickly shrub.

<sup>418</sup> Psalm 51

<sup>419</sup> Cockayne, "Leechbook III," 300–360.

<sup>420</sup> OE *cingfoil* is cinquefoil, *Potentilla species* (rose family). Probably *Potentilla reptans*, European cinquefoil.

<sup>421</sup> *Veronica beccabunga*

<sup>422</sup> OE *curmealle* is centaury

24. Take wild cunila<sup>423</sup> and brooklime; boil this in milk to a third part. Remove the roots from the milk and add wheat meal. The patient should eat the brew cold and sip the milk, and he will feel better soon.

25. Prognosis: If the brew and the drink remain within him, you may cure the man; if they flow away, it will be better for him, that you should not meddle with him, his death sickness is upon him.

### *Lacnunga*

26. For diarrhoea: take a hen's egg, lay it for two days in vinegar. If it does not show a crack, give it a slight blow, lay it again in the vinegar for a night. Then beat it up in butter, lay in oil, put it then for a time over a fire. Give this to the man to eat.<sup>424</sup>

27. For diarrhoea: take brooklime, boil it in water moderately with wheat meal, add bullock or sheep grease. Give it to the man to eat warm.<sup>425</sup>

28. Charm:<sup>426</sup>

Ecce dolgula medit dudum bethegunda brethegunda  
elecunda eleuachia mottem mee renum ortha fuetha  
ledauer noeuer terre dolge drore uhic. alleluiah.

Let one sing this prayer over that which a man is about to drink, nine times, and the Pater noster nine times.

### *Herbarium*

29. *Nymphaea alba* (white waterlily) – for dysentery (*utsicht*)<sup>427</sup>

30. Yarrow (*A. millefolium*)<sup>428</sup>

31. Horsetail<sup>429</sup> *Equisetum* (from Europe)

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<sup>423</sup> Probably not *cunila* species as Cockayne translates OE *cunellan*. *Cunila* is native to America and only discovered in the eighteenth century. OE dictionary says: wild thyme.

<sup>424</sup> Cockayne, "Lacnunga," 19.

<sup>425</sup> *Ibid.*, 47.

<sup>426</sup> *Ibid.*, 68–9.

<sup>427</sup> Cockayne, "Herbarium," 31, 173.

<sup>428</sup> Cockayne, "Herbarium," 65.

<sup>429</sup> *Ibid.*, XL.

32. Woodruff,<sup>430</sup> which Cockayne translates as both *Asphodelus ramosus* (Mediterranean) and wild mallow, *Malva silvestri*. According to Wikipedia: *Asperula* spp. and *Galium odoratum* are called woodruff (Europe).
33. Laver<sup>431</sup>, which Cockayne calls *Sparganium angustifolium* (bur-reed), but Wikipedia states: *P. umbilicalis*. Both are aquatic plants occurring in Britain.
34. Pale stonecrop<sup>432</sup> *Sempervivum sediform* (Mediterranean)
35. Tunsing wort<sup>433</sup> (white hellebore) *Veratrum album* (from Europe)
36. Orpine<sup>434</sup> *Sedum telephium* (from Europe)
37. Knotgrass<sup>435</sup> *Polygonum aviculare* (from Eurasia)

*Middle English Medical Texts*

*Gilbertus' Compendium*<sup>436</sup>

Mirabolani purgative:<sup>437</sup>

38. Citri and indi for hot humours.
39. Citri for choler and blood.
40. Indi and kebulis for phlegm.
41. Bellrici and emblici for melancholy.
41. If the humours are gone: one uses *strictories* (astringents) to stop the flux.

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<sup>430</sup> *Ibid.*, LIII

<sup>431</sup> *Ibid.*, CXXXVI

<sup>432</sup> *Ibid.*, CXXXIX

<sup>433</sup> *Ibid.*, CXL

<sup>434</sup> *Ibid.*, CXLVII

<sup>435</sup> *Ibid.*, XIX

<sup>436</sup> Getz, *Healing and Society*, 190–197. (f.254v–260)

<sup>437</sup> Mirabolani are exotic herbs: “fruits of similar-looking plants yield the 5 kinds of mirobalani; four belong to the family *Combretaceae*; m. indi and m. citri come from the same plant: *Terminalia citrina*; the former is the ripe fruit, the latter the green fruit; *T. chebula* yields m. keber; *Euphorbiaceae* gives *Phyllanthus emblica*: m. emblici.” (Getz, *Healing and Society*, 342); Getz, *Healing and Society*, 193–4.

42. *Electuarie*<sup>438</sup> made of *diacodion*,<sup>439</sup> *miclete*, and *athanasia*.<sup>440</sup> And if the patient is weak: add sugar, a little *sandragon*,<sup>441</sup> bole,<sup>442</sup> mastic,<sup>443</sup> a stone called amachites<sup>444</sup> and juice of plantain. Consume in the morning or at mealtime.

43. *Strictories* are good in combination with warm salt or herb baths, salves on the belly with *ypoquisftidos*,<sup>445</sup> or smokes.

Diet:<sup>446</sup>

For the upper and middle gut:

44. Roasted meat.

45. Thick broth with cinnamon, cloves, bole, *sandragon*, and *dragagant*.<sup>447</sup>

46. Bread of *millefoile* (yarrow) and plantain.

47. Rice or frumenti (grain) with almond milk.

48. Drink: rose water when sick or diluted wine when not feverish.

49. Drink with bran mastic and gum arabic in water.

50. Eat gruel of fenugreek or lettuce for seven days.

51. Old cheese soaked in honey.

52. Stamp plantain seed and mix it with egg white – roast and eat.

53. Take milk of cow or mint juice – drink through two pipes, every much of either

54. Drink: cow's milk with hot stones cooked therein.

55. Drink: mint with *athanasia*.

56. Syrup (to drink): Take two ounces of roses, twenty seeds of plantain, one ounce of lovage or myrtle, two ounces of sumac,<sup>448</sup> one handful of syrup of plantain, and two pounds of sugar. Addition: plantain, myrtle, or sumac seed. Soak in water and add to sugar.

57. A bath with roses, plantain, comfrey, daisies, black thorn, oak rind, chestnuts and vinegar.

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<sup>438</sup> Pastelike medicine usually having a sugar base (Getz, *Healing and Society*, 328)

<sup>439</sup> Electuary based on poppies (Getz, *Healing and Society*, 325)

<sup>440</sup> Both electuary

<sup>441</sup> Dried juice of Liliaceae (lily) (Getz, *Healing and Society*, 351)

<sup>442</sup> Clay made red by iron oxide (Getz, *Healing and Society*, 317)

<sup>443</sup> Resin from Anacardiaceae (Getz, *Healing and Society*, 339)

<sup>444</sup> Red hematites (Getz, *Healing and Society*, 328)

<sup>445</sup> *Cytinus hypocistis*.

<sup>446</sup> Getz, *Healing and Society*, 195.

<sup>447</sup> Tragacanth gum from tree (Getz, *Healing and Society*, 326)

<sup>448</sup> *Rhus* spp.

58. A plaster: acacia, plantain, and wheat meal, of everything as much; smear on the belly.

59. A bath with roses, plantain, *resta bovis*,<sup>449</sup> *sangrinari*,<sup>450</sup> shepherd's gerd,<sup>451</sup> gall and *suche othir strictories*.

60. Powder: Take roses, plantain, camomile, incense, mummy, cinnamon, mastic, *turmentil*, *balaustie*, *psidie*, *sandragon*, gall, and maces;<sup>452</sup> the same amount of everything; and put sugar in it.

61. Take one ounce of roses, two ounces of sumac plaster, two drams<sup>453</sup> of *bdellie*,<sup>454</sup> mastic, and incense, *ana*;<sup>455</sup> two drams of spodium,<sup>456</sup> *sandragon*, and *bole armoniac*;<sup>457</sup> half an ounce of gall, *psidie*, and *balaustia*; two drams of wormwood; half an ounce of mint juice;<sup>458</sup> two ounces of plantain juice; and of wheat meal and egg whites, *quantum sufficit*.<sup>459</sup> Mix those ingredients together. Substitutions include the use of lovage for myrtle,<sup>460</sup> oak blossoms for *balaustia*, and for *psidie*, oak rinds.

62. For the lower gut.<sup>461</sup> Use suppositories and *clistres* (enema) to clean the gut. Go gentle with painful guts. Check whether all fluid comes out again. Repeat until the water is clean. Next, give a cleansing *clisterie* (*mundificatif*), then a *strictorie* to stop the flux: gruel of wheat and cow milk plus mastic, and bole, and *sandragon*, and gall. One pound at once.<sup>462</sup>

### *Liber*<sup>463</sup>

63. Soak fresh cheese in red wine or ale.

64. *Quintfoil* (cinquefoil) juice with sweet milk.

65. Prognosis: give the patient garth cress seeds and red wine or water for three days. If he *staunche* (stops bleeding): he lives, if not: he dies.

66. Make a cake of yarrow juice with wheat flour. Eat it hot without drink.

<sup>449</sup> *Onollis repens*, restharrow (Getz, *Healing and Society*, 349)

<sup>450</sup> *Capsella bursa-pastoris*, shepherd's purse.

<sup>451</sup> *Dipsacus fullonum ssp. fullonum*, common teasel.

<sup>452</sup> Nutmeg

<sup>453</sup> Dram: a unit of mass and a unit of volume in the apothecaries' system. Corresponds to about a teaspoon.

<sup>454</sup> *Balsamodendron* spp., frankincense and myrrh family.

<sup>455</sup> Of each the same amount

<sup>456</sup> ME *spodie* is spodium, powder from calcination.

<sup>457</sup> Ammonium chloride

<sup>458</sup> It should probably be ME *myrte* instead of *mynte*, given the substitutions below.

<sup>459</sup> However much is needed.

<sup>460</sup> ME *myrte* is myrtle, correction from *mynte*

<sup>461</sup> Getz, *Healing and Society*, 196–7.

<sup>462</sup> *Ibid.*, 196.

<sup>463</sup> Ogden, *Liber*, 30–32.

67. Boil *tormentil* (cinquefoil) with sweet cow's milk. Drink it hot two mornings and one evening.
68. Parsley (*persel*) seed with red wine – drink it hot (recipe of R de O).
69. Cow's milk (cow that has a baby of more than one year old) with red wine.
70. Wheat, wring out the juice after soaking. Eat with salt.
71. Rooster of one year old filled with virgin wax. Roast and eat it without drink.
72. Waybread in vinegar.
73. Yarrow with red wine.
74. Hart's horn brined to powder.
75. Virgin wax with egg white. Eat it hot.
76. Wheat flour baked in oven, three hen's eggs, and mint juice. Make a cake of it.
77. Yarrow and waybread with wine or ale. Drink it hot in the evening, in the morning cold.

*MS Hunter 185*

For *menison*:

78. Rue and waybread plus wheat flour. Bake a hot cake.<sup>464</sup>
79. Take an oak board with olive oil and sit on it.<sup>465</sup>

*MS Cambridge Corpus 388*<sup>466</sup>

For *menison*:

- 80: Prognosis (like *Liber*): give a man *tuncressen* (garth cress) with wine or water for three days. If he stops bleeding, he lives; if not, he dies.
81. Milk of cow (that had no calf that year) with good red wine.
82. Parsley seed with hot red wine.
83. Dry and stamp clean wheat, boil it with salt, eat it.

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<sup>464</sup> Alonso Almeida, *A Middle English Medical Remedy Book*, 88.

<sup>465</sup> *Ibid.*, 103.

<sup>466</sup> Hunt and Benskin, *Three Receptaria from Medieval England*, 170.

*MS Oxford Rawlinson C814*<sup>467</sup>

For *menysoun/menisoun*:

84: English *mougwed* (mugwort) with wheat flour. Make a cake with this.

85: *Millefoil* (yarrow) and waybread with white wine or ale.

86: Prognosis (same as remedy 80): first hold a three day fast. Then drink a *soud* (shilling) *crassen-seid* (garth cress) after water or wine. If the patient bleeds: he lives. If his faeces turns another colour: he dies.

*MS Rylands English 404*<sup>468</sup>

For the *meneson*:

87. Crush yarrow and waybread. Take the juice of wheatflower. Combine and bake a cake. Eat as hot as possible.

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<sup>467</sup> Hunt and Benskin, *Three Receptaria from Medieval England*, 123.

<sup>468</sup> "English MS 404," University Library of Manchester,  
<http://www.library.manchester.ac.uk/inthebigynnyng/manuscript/ms404/>



## APPENDIX 2: HERBS FROM CHAPTER 3

In this appendix, all the herbs from chapter three will be provided in their alphabetical order. Also added are the (numbered) remedies they occur in from appendix one and their effective properties, as well as their Old or Middle English name if used in this thesis.

1. **Acacia:** (Remedy 49, 58) Grieve: Acacia gum is a demulcent<sup>469</sup> and is able to cover inflamed surfaces.<sup>470</sup> Antibacterial, antifungal<sup>471</sup> and anti-inflammatory.<sup>472</sup>
2. **Athanasia:** (55) Not found in medical research.
3. **Balsamodendron:** (*bdellie*) (61) Anti-inflammatory.<sup>473</sup>
4. **Bramble:** (*brembel*) (21) Grieve: The bark of the root and the leaves contain tannin, and are astringent and tonic. Bramble is good against dysentery and diarrhoea.<sup>474</sup>
5. **Brooklime:** (23, 24, 27) Diuretic<sup>475</sup> and contains tannin.<sup>476</sup>
6. **Camomile:** (60) Grieve: Tonic and antispasmodic. Chamomile is used with purgatives to prevent cramps and its flowers are carminative.<sup>477</sup> The nematicidal,<sup>478</sup> antimicrobial and antiprotozoal<sup>479</sup> activity is very high.<sup>480</sup> Anti-inflammatory and pain reliever.<sup>481</sup>
7. **Centaury:** (23) Originates from Europe and makes tea for liver and gastric problems. Grieve: Aromatic bitter, stomachic and tonic. Good for dyspepsia.<sup>482</sup> Centaury extract has antibacterial and antifungal activity.<sup>483</sup>

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<sup>469</sup> Soothing

<sup>470</sup> Grieve, "Acacia," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/a/acaci006.html>

<sup>471</sup> B.A.A. Garza, et al., "Anti-fungal and Anti-Mycobacterial Activity of Plants of Nuevo Leon, Mexico," *Pakistan Journal of Pharmaceutical Sciences* 30, no. 1 (2017): 17–21, <https://www.ncbi.nlm.nih.gov/pubmed/28603107>.

<sup>472</sup> J. Xiong, et al., "Polyphenols Isolated from Acacia mearnsii Bark with Anti-inflammatory and Carbolytic Enzyme Inhibitory Activities," *Chinese Journal of Natural Medicine* 15, no. 11 (2017): 816–824, doi: 10.1016/S1875-5364(18)30015-3.

<sup>473</sup> I. Kimura, et al., "New Triterpenes, Myrrhanol A and Myrrhanone A, from Guggul-gum Resins, and their Potent Anti-inflammatory Effect on Adjuvant-induced Air-pouch Granuloma of Mice," *Bioorganic Medical Chemistry Letters* 23, no. 11 (2001): 985–9, <https://www.ncbi.nlm.nih.gov/pubmed/11327606>

<sup>474</sup> Cameron, "Magical Medicine," 130–58; Grieve, "Bramble," in *A Modern Herbal*.

<sup>475</sup> To increase the excretion of urine

<sup>476</sup> Grieve, "Brooklime," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/b/brookl69.html>.

<sup>477</sup> Grieve, "Camomile," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/c/camell11.html>.

<sup>478</sup> Kills nematodes (worms)

<sup>479</sup> Kills protozoa – one cause of dysentery; M. De Mieri, et al., "Antiprotozoal Activity-Based Profiling of a Dichloromethane Extract from *Anthemis nobilis* Flowers," *Journal of Natural Production* 24, no. 80 (2017): 459–470, doi: 10.1021/acs.jnatprod.6b00980.

<sup>480</sup> A. Al-Marby, et al., "Nematicidal and Antimicrobial Activities of Methanol Extracts of 17 Plants, of Importance in Ethnopharmacology, Obtained from the Arabian Peninsula," *Journal of Intercultural Ethnopharmacology* 21, no. 5 (2016): 114–21, doi: 10.5455/jice.20160217040157.

<sup>481</sup> Mahdizadeh, Khaleghi Ghadiri, and Gorji, "Avicenna's Canon of Medicine: a review of analgesics and anti-inflammatory substances," *Avicenna Journal of Phytomedicine* 5.3 (2015): 182–202.

<sup>482</sup> Grieve, "Centaury," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/c/centau46.html>.

<sup>483</sup> Siler, et al. "Centauries as Underestimated Food Additives: Antioxidant and Antimicrobial Potential," 367–76.

8. **Cinnamon:** (45, 60) “Astringent, stimulant, antiseptic; more powerful as a local than as a general stimulant. [...] It stops vomiting, relieves flatulence, and given with chalk and astringents is useful for diarrhoea and haemorrhage.”<sup>484</sup> Essential oil has antifungal<sup>485</sup> and antibacterial effects.<sup>486</sup>
9. **Cinquefoil:** (*cinqfoil, quintfoil, tormentil*) (23, 64, 67) Grieve: astringent, used against diarrhoea and inflammation and infection. Also used to cool the humours and blood in the body. Its root in vinegar is good for the bowels.<sup>487</sup> There is evidence for cinquefoil in treating diarrhoea,<sup>488</sup> because of its plant tannins.<sup>489</sup> Cinquefoil is also rich in ellagitannin, an anti-inflammatory agent.<sup>490</sup>
10. **Cloves:** (45) Grieve: Stimulating, carminative and aromatic; works against nausea, flatulence, indigestion and dyspepsia.<sup>491</sup> It has antimicrobial, bactericidal and antifungal activity.<sup>492</sup> Clove extract shows antibacterial activity against food borne pathogenic bacteria.<sup>493</sup>
11. **Comfrey:** (57) This plant is used topically to relieve pain and inflammation.<sup>494</sup> Grieve: emulgent,<sup>495</sup> mildly astringent and expectorant.<sup>496</sup> Comfrey contains much mucilage, thus it has emollient<sup>497</sup> action, which forms a gentle remedy in cases of diarrhoea and dysentery.<sup>498</sup>
12. **Common teasel:** (*shepherd's gerd*) (59) Not found in medical research.
13. **Cress:** (65, 80, 86) Nutritive.
14. **Cunila:** (24) Is actually wild thyme. Not found in medical research.

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<sup>484</sup> Grieve, “Cinnamon,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/c/cinnam69.html>.

<sup>485</sup> Farisa Banu, et al., “Effects of Patchouli and Cinnamon Essential Oils on Biofilm and Hyphae Formation by *Candida* Species,” 332–339.

<sup>486</sup> Hossan, et al., “Antibacterial Effects of 18 Medicinal Plants Used by the Khyang Tribe in Bangladesh,” 201–208; Vijayan, and Mazumder, “In Vitro Inhibition of Food Borne Mutagens Induced Mutagenicity by Cinnamon (*Cinnamomum cassia*) Bark Extract,” 1–9.

<sup>487</sup> Grieve, “Cinquefoil,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/f/fivele20.html>

<sup>488</sup> Anheyer, et al., “Herbal Medicines for Gastrointestinal Disorders in Children and Adolescents: A Systematic Review,” 62–63.

<sup>489</sup> Cameron, “Rational Medicine,” 127–8.

<sup>490</sup> Piwowarski, et al., “Role of Human Gut Microbiota Metabolism in the Anti-inflammatory Effect of Traditionally Used Ellagitannin-rich Plant Materials,” 801–9.

<sup>491</sup> Grieve, “Cloves,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/c/cloves76.html>

<sup>492</sup> F.C. de Aguiar, et al., “Antimicrobial Activity of Selected Essential Oils against *Streptococcus suis* Isolated from Pigs,” *MicrobiologyOpen* 24 (2018): 613, doi: 10.1002/mbo3.613; T. Schroder, et al., “Antifungal Activity of Essential Oils against Fungi Isolated from Air,” *International Journal of Occupational Environmental Health* 8 (2018): 1–6, doi: 10.1080/10773525.2018.1447320.

<sup>493</sup> Mostafa, et al., “Antimicrobial Activity of some Plant Extracts against Bacterial Strains Causing Food Poisoning Diseases,” 361–366.

<sup>494</sup> Staiger, “Comfrey Root: from Tradition to Modern Clinical Trials,” 58–64.

<sup>495</sup> Stimulates flow of bile or urine.

<sup>496</sup> Helps eject mucus.

<sup>497</sup> Soothing and softening

<sup>498</sup> Grieve, “Comfrey,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/c/comfre92.html>

15. **Cytinus hypocistis:** (*ypoquisftidos*) (43) This Mediterranean plant has been used in traditional medicine to treat dysentery because of its astringent qualities. Its extract has antimicrobial effect.<sup>499</sup>
16. **Daisy:** (57) Grieve: anti-inflammatory.<sup>500</sup> Its compounds have antimicrobial activity.<sup>501</sup>
17. **Everlasting:** (*efelastan*) (21) Anodyne,<sup>502</sup> astringent. Useful in diarrhoea, dysentery.<sup>503</sup>
18. **Fenugreek:** (8, 50) This plant has strong mucilage, which is emollient.<sup>504</sup> Its seeds in water is used internally in inflamed conditions of the stomach and intestines.<sup>505</sup>
19. **Garlic:** (7) The antibacterial effects of garlic juices have been known for over a century. Garlic inhibits the growth of the *Helicobacter pylori* bacteria, seen as the cause of gastric ulcers and also associated with certain stomach cancers. It has antiviral, -bacterial, and -fungal properties, especially in its raw state. “Garlic juice in particular, even at high dilution, inhibits the growth of species of staphylococcus and of several other kinds of bacteria.”<sup>506</sup> Garlic is antiseptic and contains prebiotic fibre. Grieve: garlic possesses stimulant and stomachic properties.<sup>507</sup>
20. **Horsetail:** (31) Contains silica, making it anti-inflammatory.<sup>508</sup> The parts of horsetail above ground have been used to treat diarrhoea and stomach problems. Antimicrobial and antioxidant activity.<sup>509</sup> It works against *Candida albicans* biofilms.<sup>510</sup>
21. **Incense:** (60, 61) Incense vapours have antibacterial and antifungal activity.<sup>511</sup>
22. **Knotgrass:** (37) Grieve: The plant has astringent properties, making it useful in diarrhoea, bleeding piles and haemorrhages.<sup>512</sup>

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<sup>499</sup> B. Zucca, et al., “Antimicrobial, Antioxidant and Anti-tyrosinase Properties of Extracts of the Mediterranean Parasitic Plant *Cytinus hypocistis*,” *BMC Research Notes* 13, no. 8 (2015): 562–71, doi: 10.1186/s13104-015-15465.

<sup>500</sup> Grieve, “Daisy,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/d/daisyc03.html>

<sup>501</sup> Avato, et al., “Antimicrobial activity of polyacetylenes from *Bellis perennis* and their synthetic derivatives,” 503–7; Kavalcioglu, et al., “Biological activities of *Bellis perennis* volatiles and extracts,” 147–50.

<sup>502</sup> To alleviate pain.

<sup>503</sup> Grieve, “Everlasting,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/l/lifeve18.html>

<sup>504</sup> Softening, relaxing

<sup>505</sup> Grieve, “Fenugreek,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/f/fenugr07.html>

<sup>506</sup> Cameron, “Anglo-Saxon magic and medicine,” 202.

<sup>507</sup> Grieve, “Garlic,” in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/g/garlic06.html>.

Steinborn, et al., “In Vitro Anti-inflammatory Effects of *Equisetum arvense* Are Not Solely Mediated by Silica,” 519–526.

<sup>509</sup> Yeganegi, et al., “*Equisetum telmateia* extracts: Chemical compositions, antioxidant activity and antimicrobial effect on the growth of some pathogenic strain causing poisoning and infection,” 62–67.

<sup>510</sup> Almeida, et al., “Antimicrobial Activity of Denture Adhesive Associated with *Equisetum giganteum*- and *Punica granatum*-enriched Fractions against *Candida albicans* Biofilms on Acrylic Resin Surfaces,” 62–73.

<sup>511</sup> M. Ljaljević Grbić, et al., “Frankincense and Myrrh Essential Oils and Burn Incense Fume against Micro-inhabitants of Sacral Ambients. Wisdom of the Ancients?” *Journal of Ethnopharmacology* 9, no. 219 (2018): 1–14, doi: 10.1016/j.jep.2018.03.003.

<sup>512</sup> Grieve, “Knotgrass,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/k/knogra08.html>

23. **Laver:** (33) Not found in medical research.
24. **Lily:** (also *sandragon*) (29, 42, 45, 60, 61, 62) Lily root is astringent and demulcent, and is used in dysentery and diarrhoea. It contains tannins,<sup>513</sup> and is anti-inflammatory<sup>514</sup> as well as antibacterial.<sup>515</sup>
25. **Lovage:** (56, 61) Grieve: lovage is aromatic, stimulant, diuretic and carminative. This plant is used for stomach problems, fevers, flatulence and obstructions.<sup>516</sup> Lovage has antibacterial and antimycobacterial activity.<sup>517</sup>
26. **Lupin:** (23) Grieve: anthelmintic<sup>518</sup> and diuretic.<sup>519</sup> Lupin has antifungal activity<sup>520</sup> and is nutritive, because it is high in protein.
27. **Mallow:** (8) Originates from Europe and Asia. The leaves reduce gut irritation and have a laxative effect. The roots have mucilage (gel), which is sweet and has many carbohydrates: good for the sick. The mucilage is also good for inflammation and irritation.<sup>521</sup>
28. **Mastic:** (49, 60, 61, 62) Chewable resin from the mastic tree. Mastic contains antioxidants and has antibacterial and antifungal properties. Mastic can cure peptic ulcers by killing the *Helicobacter pylori* bacteria.<sup>522</sup> Grieve states mastic is a stimulant and diuretic.<sup>523</sup>
29. **Mint:** (53, 55, 61, 76) Grieve's *Herbal* states the antispasmodic action of peppermint oil relieves pains in the gastrointestinal track. Because of its stimulating, stomachic and carminative properties, it is useful against dyspepsia, flatulence, colic and other pains and cramps in the abdomen.<sup>524</sup> Peppermint has had the most scientific research of all mint species for gut problems. Peppermint oil alone and in combination with other herbs was discovered to be more effective than a placebo in reducing symptoms of dyspepsia, as gastric emptying was

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<sup>513</sup> Grieve, "Lily," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/l/lilwhi26.html>

<sup>514</sup> R.O. Bakr, et al., "Profile of Bioactive Compounds in *Nymphaea alba* L. Leaves Growing in Egypt: Hepatoprotective, Antioxidant and Anti-inflammatory Activity," *BMC Complementary Alternative Medicine* 17, no. 1 (2017): 52–65, doi: 10.1186/s12906-017-1561-2.

<sup>515</sup> A.B. Yildirim, F.P. Karakas, and A.U. Turker, "In Vitro Antibacterial and Antitumor Activities of some Medicinal Plant Extracts, Growing in Turkey," *Asian Pacific Journal of Tropical Medicine* 6, no. 8 (2013): 616–24, doi: 10.1016/S1995-7645(13)60106-6.

<sup>516</sup> Grieve, "Lovage," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/l/lovage42.html>.

<sup>517</sup> M.I. Garvey, et al., "Medicinal Plant Extracts with Efflux Inhibitory Activity against Gram Negative Bacteria." *International Journal of Antimicrobial Agents* 37, no. 2 (2011): 145–51, doi: 10.1016/j.ijantimicag.2010.10.027; A. Schinkovitz, et al., "Antimycobacterial Polyacetylenes from *Levisticum officinale*," *Phytotherapy Research* 22, no. 5 (2008): 681–4, doi: 10.1002/ptr.2408.

<sup>518</sup> Destroying parasitic worms.

<sup>519</sup> Grieve, "Lupin," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/l/lupins50.html>

<sup>520</sup> Confortin, et al., "Extracts from *Lupinus albescens*: Antioxidant Power and Antifungal Activity in Vitro against Phytopathogenic Fungi," 1–8.

<sup>521</sup> Grieve, "Mallow," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/m/mallow07.html>.

<sup>522</sup> Huwez et al., "Mastic Gum Kills *Helicobacter Pylori*," 1946.

<sup>523</sup> Grieve, "Mastic," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/m/mastic23.html>.

<sup>524</sup> Grieve, "Mint," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/m/mints-39.html>.

accelerated by peppermint oil added to a test meal.<sup>525</sup> Furthermore, the oil reduces symptoms, pain, and bloating in IBS patients.<sup>526</sup> It also has antispasmodic action on the gastrointestinal muscle.<sup>527</sup> Peppermint oil and its constituents (e.g. menthol) showed activity against several bacteria, such as MRSA and *E. coli*.<sup>528</sup> Hence, this proves all of Grieve's assertions, with antibacterial as added property. However, it is warned that peppermint oil should not be administered to patients with heartburn or gastric ulcers because their symptoms may be exacerbated,<sup>529</sup> although the use of the whole plant instead of concentrated oil in medieval remedies may have prevented this from happening.

30. **Mirabolani:** (38–41) Emblici from the plant Euphorbiaceae is anti-inflammatory.<sup>530</sup>

Citri has antimicrobial activity of tannins from the plant *Terminalia citrina*.<sup>531</sup>

31. **Mugwort:** (OE: *mucgwyrt*, ME: *mougwed*) (21, 84) Mugwort has antiseptic, antispasmodic and antigastic activity.<sup>532</sup> Grieve states that an infusion of this plants is great for stomach problems and creates appetite.<sup>533</sup>

32. **Myrtle:** (56, 61) Myrtle essential oil can improve bleeding, pain and irritation in people with haemorrhoids.<sup>534</sup> Its oil also has antibacterial activity against salmonella,<sup>535</sup> antifungal activity<sup>536</sup> and is effective in the treatment of digestive diseases.<sup>537</sup>

<sup>525</sup> S.S. Dalvi, et al., "Effect of Peppermint Oil on Gastric Emptying in Man: a Preliminary Study Using a Radiolabelled Solid Test Meal," *Indian Journal of Physiology and Pharmacology* 35, no. 3 (1991): 212–214.

<sup>526</sup> M.H. Pittler, and E. Ernst, "Peppermint Oil for Irritable Bowel Syndrome: a Critical Review and Metaanalysis," *American Journal of Gastroenterology* 93, no. 7 (1998): 1131–1135.

<sup>527</sup> Hills, and Aaronson, "The Mechanism of Action of Peppermint Oil on Gastrointestinal Smooth Muscle," 55–65.

<sup>528</sup> Osawa et al., "The Antibacterial Activities of Peppermint Oil and Green Tea Polyphenols, Alone and in Combination, against Enterohemorrhagic *Escherichia coli*," 1–7.

<sup>529</sup> Grigoleit, and Grigoleit, "Pharmacology and Preclinical Pharmacokinetics of Peppermint Oil," 612–616.

<sup>530</sup> C.D.M. Oliveira-Tintino et al., "Anti-inflammatory and Anti-edematogenic Action of the *Croton campestris* A. St.-Hil (Euphorbiaceae) Essential Oil and the Compound  $\beta$ -caryophyllene in in Vivo Models," *Phytomedicine* 1, no. 41 (2018): 82–95, doi: 10.1016/j.phymed.2018.02.004.

<sup>531</sup> S. Burapadaja, and A. Bunchoo, "Antimicrobial Activity of Tannins from *Terminalia citrina*," *Planta Medica* 61, no. 4 (1995): 365–6, <https://www.ncbi.nlm.nih.gov/pubmed/7480186>.

<sup>532</sup> G. Lian, F. Li, et al., "Herbal Extract of *Artemisia vulgaris* (mugwort) Induces Antitumor Effects in HCT-15 Human Colon Cancer Cells via Autophagy Induction, Cell Migration Suppression and Loss of Mitochondrial Membrane Potential," *Journal BUON* 23, no. 1 (2018): 73–78.

<sup>533</sup> Grieve, "Mugwort," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/m/mugwor61.html>

<sup>534</sup> Mahboubi, "Effectiveness of *Myrtus communis* in the Treatment of Haemorrhoids," 351–358.

<sup>535</sup> Fadil, et al., "Combined Treatment of *Thymus vulgaris* L., *Rosmarinus officinalis* L. and *Myrtus communis* L. Essential Oils against *Salmonella typhimurium*," 211–220.

<sup>536</sup> Barac, et al., "Antifungal Activity of *Myrtus communis* against *Malassezia* sp. Isolated from the Skin of Patients with Pityriasis Versicolor," 253–257.

<sup>537</sup> Jabri, Marzouki, and Sebai, "Ethnobotanical, Phytochemical and Therapeutic Effects of *Myrtus communis* L. Berries Seeds on Gastrointestinal Tract Diseases: a Review," 1–7.

33. **Nutmeg:** (60) Nutmeg has a strong antibacterial extract,<sup>538</sup> also against multiresistant bacteria<sup>539</sup> and is anti-inflammatory as well.<sup>540</sup> Grieve: this spice is a local stimulant in the guts.<sup>541</sup>
34. **Oak:** (22, 57, 61, 79) Grieve: oak is tonic, astringent and antiseptic.<sup>542</sup> Its extract is antibacterial<sup>543</sup> and anti-inflammatory.<sup>544</sup>
35. **Orpine:** (36) This plant possesses anti-inflammatory and analgesic<sup>545</sup> properties.<sup>546</sup>
36. **Pale stonecrop:** (34) Not found in medical research.
37. **Parsley:** (5, 68, 82) This European and Eastern Mediterranean plant is anti-inflammatory and antispasmodic. Its seeds are more diuretic than its leaves.<sup>547</sup>
38. **Pennyroyal:** (8) Grieve states pennyroyal is carminative and a stimulant. It is also beneficial for spasms, flatulence and sickness, being warming to the stomach.<sup>548</sup> Cameron also praises pennyroyal. He states it is still used for the distressed stomach, especially as a meat sauce to aid its digestion.<sup>549</sup> In scientific research, pennyroyal oils showed the greatest antimicrobial activity of some essential oils.<sup>550</sup> However, pennyroyal oil is not recommended because of its toxicity, with many reports of adverse events and fatalities documented, already in teaspoon doses.<sup>551</sup> This small dose would probably reflect the amount in Anglo-Saxon

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<sup>538</sup> A. Al-Mariri and M. Safi, "In Vitro Antibacterial Activity of Several Plant Extracts and Oils against Some Gram-Negative Bacteria," *Iran Journal of Medical Science* 39, no. 1 (2014): 36–43, <https://www.ncbi.nlm.nih.gov/pubmed/24453392>; J.K. Dzutam, et al., "In Vitro Antibacterial and Antibiotic Modifying Activity of Crude Extract, Fractions and 3',4',7-trihydroxyflavone from *Myristica fragrans* Houtt against MDR Gram-negative Enteric Bacteria," *BMC Complementary Alternative Medicine* 15, no. 18 (2018): 15–24. (2018): 15, doi: 10.1186/s12906-018-2084-1.

<sup>539</sup> S. Balakrishnan, et al., "Biosynthesis of Silver Nanoparticles Using *Myristica fragrans* Seed (nutmeg) Extract and its Antibacterial Activity against Multidrug-resistant (MDR) *Salmonella enterica* serovar Typhi Isolates," *Environment Science Pollution Research International* 24, no. 17 (2017): 14758–14769, doi: 10.1007/s11356-017-9065-7.

<sup>540</sup> C.R. Zhang, et al., "Antioxidant and Antiinflammatory Compounds in Nutmeg (*Myristicafragrans*) Pericarp as Determined by in vitro Assays," *Natural Product Community* 10.8 (2015): 1399–402.

<sup>541</sup> Grieve, "Nutmeg," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/n/nutmeg07.html#med>

<sup>542</sup> Grieve, "Oak," in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/o/oakcom01.html>

<sup>543</sup> Hubert, et al., "In Vitro Dermo-Cosmetic Evaluation of Bark Extracts from Common Temperate Trees," 1351–1358.

<sup>544</sup> Piwowarski, et al., "Role of Human Gut Microbiota Metabolism in the Anti-inflammatory Effect of Traditionally Used Ellagitannin-rich Plant Materials," 801–9.

<sup>545</sup> Pain killer.

<sup>546</sup> D. Altavilla, et al., "Anti-inflammatory Effects of the Methanol Extract of *Sedum telephium* ssp. maximum in Lipopolysaccharide-stimulated Rat Peritoneal Macrophages," *Pharmacology* 82, no. 4 (2008): 250–6, doi: 10.1159/000157626 ; A. Sendl, et al., "Anti-inflammatory and Immunologically Active Polysaccharides of *Sedum telephium*," *Phytochemistry* 34, no. 5 (1993): 1357–62, <https://www.ncbi.nlm.nih.gov/pubmed/7764285>.

<sup>547</sup> Grieve, "Parsley," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/p/parsle09.html>

<sup>548</sup> Grieve, "Pennyroyal," in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/p/pennyroyal23.html>.

<sup>549</sup> Cameron, "Anglo-Saxon Medicine and Magic," 199.

<sup>550</sup> N. Silva et al., "Antimicrobial Activity of Essential Oils from Mediterranean Aromatic Plants against Several Foodborne and Spoilage Bacteria," *Food Science Technology International* 19, no. 6 (2013): 503–10.

<sup>551</sup> "Pennyroyal," *Drugs.com*, <https://www.drugs.com/npp/pennyroyal.html>

remedies – thus possible being deadly. Its common historical use in medicine is therefore interesting and possibly controversial.

39. **Pepper:** (4) Grieve states pepper is aromatic, stimulant, carminative<sup>552</sup> and possesses febrifuge<sup>553</sup> properties. Its stimulant action is strong on the mucous membrane of the rectum, and is thus good for constipation, digestion and flatulence.

40. **Pomegranate:** (*balaustie, psidie*) (60, 61) “Several studies have demonstrated the antimicrobial, anthelmintic, and antioxidant potential of the active ingredients of pomegranate extracts, suggesting their preventive and curative role in several gastrointestinal disorders.”<sup>554</sup> Different parts of the pomegranate tree have different properties. The flowers are astringent and anthelmintic, “the bark is also astringent and the seeds are demulcent.”<sup>555</sup> The fruit is a mild astringent and helps in some fevers, and the bark is used to remove tapeworm. In India the rind is used in diarrhoea and chronic dysentery, often combined with opium.”<sup>556</sup>

41. **Poppy:** (5, 42) Opium is made of poppy, which is a narcotic substance.

42. **Restharrow:** (59) Not found in medical research.

43. **Rue:** (5, 7, 78) Nowadays, rue is considered toxic:<sup>557</sup> “[l]arge doses (more than 100 mL of the oil or approximately 120 g of the leaves in 1 dose) can cause violent gastric pain, vomiting, systemic complications, and death. Exposure to common rue, or herbal preparations derived from it, can cause [...] burn-like blisters on the skin”.<sup>558</sup> However, many studies also indicate the benefit of rue. One experiment found that the *Ruta chalepensis* (mountain rue) extract and its essential oil showed promising anthelmintic<sup>559</sup> activity on gastrointestinal worms.<sup>560</sup> Antispasmodic<sup>561</sup> effects of rue have similarly been observed in the gastrointestinal muscle.<sup>562</sup> Furthermore, more than fifteen compounds in rue have been identified as having antibacterial and antifungal activity.<sup>563</sup> Lastly, Grieve states in her *Modern Herbal* that rue is strongly stimulating and antispasmodic, and a mild stomachic – which is supported by above

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<sup>552</sup> Expulsion of gas from the stomach or bowel.

<sup>553</sup> Reduces fever.

<sup>554</sup> Shaoul, et al., “Effect of Pomegranate Juice on Intestinal Recovery Following Methotrexate-Induced Intestinal Damage in a Rat Model,” 1–9.

<sup>555</sup> Forms a soothing film over a mucous membrane, relieving minor pain and inflammation of the membrane.

<sup>556</sup> Grieve, “Pomegranate,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/p/pomegr60.html>

<sup>557</sup> “Rue,” *Drugs.com*, accessed 1 June, 2017, <https://www.drugs.com/npp/rue.html>.

<sup>558</sup> Furniss and Adams, “Herb of Grace: an Unusual Cause of Phytophotodermatitis Mimicking Burn Injury,” 767–769.

<sup>559</sup> A group of antiparasitic drugs that expel parasitic worms (helminths) and other internal parasites from the body.

<sup>560</sup> Orty et al., “In Vitro Anthelmintic Activity of Active Compounds of the Fringed Rue *Ruta chalepensis* against Dairy Ewe Gastrointestinal Nematodes,” 1–7.

<sup>561</sup> Works against (involuntary) cramps.

<sup>562</sup> Minker, et al., “Effect of Secondary Substances Isolated from the *Ruta graveolens* L. on the Coronary Smooth Muscle,” 7–11.

<sup>563</sup> Wolters and Eilert, “Antimicrobial Substances in Callus Cultures of *Ruta graveolens*,” 166–174.

research.<sup>564</sup> Cameron argues that rue is antihæmorrhagic: “[a] remedy in Leechbook III combines the antibacterial properties of plantain with the antihæmorrhagic properties of rue.”<sup>565</sup>

44. **Shepherd’s purse:** (59) A compound in this plant has anti-inflammatory and anti-superbacterial properties.<sup>566</sup>

45. **Sumac:** (56, 61) Grieve states sumac’s bark is tonic, astringent, and antiseptic; and its berries are cooling and diuretic.<sup>567</sup> Extracts from the sumac tree work against inflammation in intestinal cells.<sup>568</sup>

46. **Tragacanth:** (*dragagant*) (45) This gum from the Astragalus tree is antifungal<sup>569</sup> and antibacterial.<sup>570</sup>

47. **Tunsing wort:** (16) Not found in medical research.

48. **Waybread/plantain:** (46, 52, 56–61, 72, 77, 85, 87) Its fibre is used as both a laxative and for bulking, now used in psyllium supplements. Grieve states plantain is refrigerant, diuretic, deobstruent and somewhat astringent: “[a]ppplied to a bleeding surface, the leaves are of some value in arresting hæmorrhage, but they are useless in internal hæmorrhage, although they were formerly used for bleeding of the lungs and stomach, consumption and dysentery.”<sup>571</sup> Psyllium seeds are also used for their large yield of mucilage. Cameron argues plantains have antibiotic activity in all their parts (leaves, inflorescences, roots, seeds):<sup>572</sup> “Of the forty-eight remedies containing plantain in the three Leechbooks, twenty-five are for conditions where its antibiotic properties would have been of benefit.”<sup>573</sup> The plant is also “anti-ulcerative,

<sup>564</sup> Grieve, “Rue,” in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/r/rue---20.html>.

<sup>565</sup> Cameron, “Rational medicine,” 124–126.

<sup>566</sup> W.J. Choi, et al., “Anti-Inflammatory and Anti-Superbacterial Properties of Sulforaphane from Shepherd's Purse,” *Korean Journal Physiology Pharmacology* 18, no. 1 (2014): 33–9. doi: 10.4196/kjpp.2014.18.1.33 ; J.M. Cha, et al. “Phenolic Glycosides from *Capsella bursa-pastoris* (L.) Medik and Their Anti-Inflammatory Activity,” *Molecules* 20, no. 22 (2017): 1023–1031, doi: 10.3390/molecules22061023.

<sup>567</sup> Grieve, “Sumac,” in *A Modern Herbal*.

<sup>568</sup> Z. Ben Barka, et al., “A Combination of NMR and Liquid Chromatography to Characterize the Protective Effects of *Rhus tripartita* Extracts on Ethanol-induced Toxicity and Inflammation on Intestinal Cells,” *Journal of Pharmaceutical Biomedical Analysis* 20, no. 150 (2018): 347–354, doi: 10.1016/j.jpba.2017.12.032

<sup>569</sup> H.A. Mohamed, et al., “Antifungal Activity of Oral (Tragacanth/Acrylic acid) Amphotericin B Carrier for Systemic Candidiasis: In Vitro and In Vivo Study,” *Drug Delivery Translational Research* 8, no. 1 (2018): 191–203. doi: 10.1007/s13346-017-0452-x.

<sup>570</sup> M. Ranjbar-Mohammadi, “Production of Cotton Fabrics with Durable Antibacterial Property by Using Gum Tragacanth and Silver,” *International Journal of Biology and Macromolecules* 1, no. 109 (2018): 476–482, doi: 10.1016/j.ijbiomac.2017.12.093.

<sup>571</sup> Grieve, “Plantain,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/p/placom43.html>

<sup>572</sup> Cameron, “Anglo-Saxon Magic and Medicine,” 206.

<sup>573</sup> Cameron, “Rational Medicine,” 124.



antidiarrhoeal, anti-inflammatory, antibacterial, and antiviral.”<sup>574</sup> However, “[p]lantain in salves has no inhibitory effect against bacteria.”<sup>575</sup>

49. **Woodruff:** (32) This plant is rich in tannins, is demulcent and astringent, and is said to remove pain and inflammation.<sup>576</sup>

50. **Wormwood:** (61) Grieve’s *Herbal* states wormwood is a stomachic and anthelmintic herb. It is a good remedy for bad digestion and flatulence.<sup>577</sup> Wormwood is proven to be antiparasitic and antibacterial in scientific experiments. Its essential oils have antimicrobial activity against various bacteria and fungi. The activity was considered comparable with that of common antibiotics.<sup>578</sup> However, wormwood is classified as an unsafe herb by the US Food and Drug Administration (FDA) because of its component thujone. This can be toxic, give convulsions and is dangerous for pregnancy.<sup>579</sup> But, without the medieval ability to extract thujone, the amount of toxic substance in a remedy would probably not be that much and not cause trouble.

51. **Yarrow:** (also *millefoile*) (30, 46, 66, 73, 77, 85, 87) This plant is a digestive tonic and is antispasmodic,<sup>580</sup> prokinetic,<sup>581</sup> and antibacterial and antifungal.<sup>582</sup> Grieve states yarrow is a diaphoretic, astringent, tonic, stimulant and mild aromatic.<sup>583</sup>

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<sup>574</sup> Adom, et al., “Chemical Constituents and Medical Benefits of *Plantago major*,” 348–360.

<sup>575</sup> Brennessel, Drout and Gravel, “A Reassessment of the Efficacy of Anglo-Saxon Medicine,” 194.

<sup>576</sup> Cameron, “Rational Medicine,” 128.

<sup>577</sup> Grieve, “Wormwood,” in *A Modern Herbal*, <https://botanical.com/botanical/mgmh/w/wormwo37.html>.

<sup>578</sup> P. Blagojevic et al., “Chemical Composition of the Essential Oils of Serbian Wild-growing *Artemisia absinthium* and *Artemisia vulgaris*,” *Journal of Agricultural Food Chemistry* 54, no. 13 (2006): 4780–4789.

<sup>579</sup> R.W. Olsen, “Absinthe and Gamma-aminobutyric Acid Receptors,” *Proceedings of the National Academy of Sciences* 97, no. 9 (2000): 4417–8.

<sup>580</sup> Lemmens-Gruber, et al., “Investigation of the spasmolytic activity of the flavonoid fraction of *Achillea millefolium* s.l. on isolated guinea-pig ilea,” 582–8.

<sup>581</sup> Mohseni, et al., “Does *Achillea millefolium* Extracts Possess Prokinetic Effects on the Bovine Abomasum through M3 Muscarinic Receptors?” 115–120; Stimulates bowel movement.

<sup>582</sup> El-Kalamouni, et al., “Antioxidant and Antimicrobial Activities of the Essential Oil of *Achillea millefolium* L. Grown in France,” 30–39.

<sup>583</sup> Grieve, “Yarrow,” in *A Modern Herbal*, <http://www.botanical.com/botanical/mgmh/y/yarrow02.html>