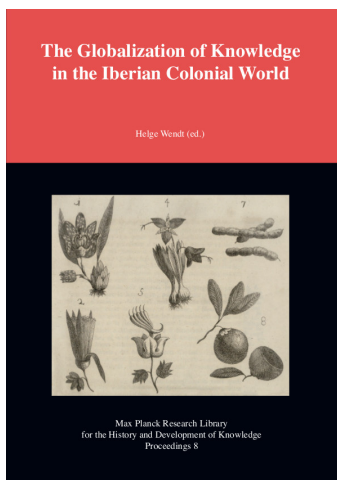


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the Portuguese Colonial System: Evidence from Sixteenth to Eighteenth-Century
Ethno-Botanical Manuscripts



In: Helge Wendt (ed.): *The Globalization of Knowledge in the Iberian Colonial World*
Online version at <http://edition-open-access.de/proceedings/10/>

ISBN 978-3-945561-07-2

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Printed and distributed by:
Neopubli GmbH, Berlin

<http://www.epubli.de/shop/buch/53870>

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed
bibliographic data are available in the Internet at <http://dnb.d-nb.de>

Chapter 6

Global Cross-Cultural Dissemination of Indigenous Medical Practices through the Portuguese Colonial System: Evidence from Sixteenth to Eighteenth-Century Ethno-Botanical Manuscripts

Timothy D. Walker

Portuguese colonial exploration and settlement from the fifteenth to eighteenth centuries included a significant dimension of medical inquiry, the impact of which resonated throughout learned European society and well beyond. Early commercial contacts with native peoples and sustained missionary activity, combined with pragmatic attempts to address threats to the health of European settlers in the tropics, occasioned Portuguese medical-botanical prospecting in Africa, India, the Persian Gulf, China, Malaysia, Indonesia and South America. Such pioneering experimentation added extensively to human knowledge about, and understanding of, traditional indigenous healing practices and pharmacological botany. The enduring impact of these tentative inquiries in matters of medicine and natural philosophy has long outlasted the transient economic importance of the Lusophone maritime empire. In an unparalleled feat of knowledge acquisition and dissemination, Portuguese colonial agents brought indigenous drugs and information about native healing methods back to Europe, but also spread such diverse commodities and novel techniques to colonized territories around the planet.

Systematic Portuguese maritime exploration and settlement in the tropics began along the west African coast in the 1420s, predating by far any other comparable state-coordinated European effort; consequently, Portuguese exposure to tropical diseases, as well as various indigenous methods of treating them, lasted far longer than that of any rival European seafaring nation.¹ Early practical necessity, combined with long familiarity and compelling mercantile considerations, resulted in the Portuguese tendency toward being especially receptive to the widespread adoption and dissemination of indigenous medical practices, becoming perhaps more reliant on them than their European counterparts. Through

¹Boxer (1991, 1, 14–29); Disney (2009, xix–xxii); Newitt (2004, 10–34); Russell-Wood (1992, 8–24); Winius (1995, 10–16).

diverse commercial, ecclesiastical, and professional medical channels, knowledge of indigenous botanicals and healing techniques circulated throughout the Portuguese-speaking world and beyond during the colonial era, enriching medical resources in European imperial enclaves around the globe. In sub-Saharan Africa, as in Brazil and their Asian trading enclaves, Portuguese medical practitioners encountered radically different spheres of healing knowledge, shaped by each region's unique ecological and social context. The Portuguese would explore, exploit, expropriate and export these bodies of native medical experience for more than three centuries.

But what were the practical mechanisms of this exceptional transfer and diffusion of knowledge? Portuguese descriptive works—manuscript reports and field guides about Asian and South American medicinal plants in particular—informed Europeans for the first time about many of the efficacious drugs commonly employed in indigenous healing traditions. Portuguese colonial agents (missionaries, merchants, military officers, medical practitioners, colonial administrators) sent not just consignments of indigenous drugs, but also codified reports with detailed information about various native healing substances and methods, back to Europe, as well as to other colonized territories (Walker 2009). Thus, European agents across the Portuguese trading system, by interacting with native groups encountered during their seaborne expeditions, were pioneers in this specific process of knowledge transfer: a protracted cross-cultural collaborative procurement focused on healing. Entirely new epistemologies of medicine evolved through, and as a consequence of, the sustained Portuguese colonial experience during the early modern era.

A variety of interrelated motives animated Portuguese efforts to gather medical information during the age of exploration and colonization; separating these into distinct threads of causality is not easy. First, we might point to the pure profitability of exotic medicines. Europeans valued many spices from Asia for their medicinal as well as culinary applications; to contemporaries, the Portuguese term *droga* (“drug”) was effectively synonymous with “spice” (Russell-Wood 1992, 129). Fortunes were at stake, and this drove a determined—at times rapacious—search for new medicinal substances. Maintaining territorial power, too, depended on the ability to keep settlers and soldiers fit in the tropics. In Asia and Africa, due in part to a dearth of population resources at home, the Portuguese colonial grip was chronically weak and precarious, so healing knowledge rapidly gained a strategic imperial dimension. For Christian missionaries, developing and demonstrating superior healing prowess with local remedies gave an advantage in their evangelical endeavors; saving lives evolved quickly into

a deliberate strategy for winning converts and saving souls.² During the opening phases of Portuguese empire building, such practical motives and immediate concerns took precedence over any purely intellectual considerations. Medical explorations driven solely by an interest in botany or natural philosophy were rare, and would not occur in the Portuguese sphere in any methodical way until the late eighteenth century (Walker 2013). Detailed information about the global botanical networks of the Portuguese Empire, which came into being earlier and were far more diverse geographically, ecologically and culturally than those of any European rival, is conspicuously downplayed in (or nearly omitted from) most historical accounts that consider the biological consequences of maritime colonization (Crosby 1975; 1986; Schlesinger 1996). Few historians of medicine (Lusophone historiography excepted) have examined in detail the effect of protracted Portuguese exposure to indigenous healing ideas, or why Portuguese colonial institutions or organizations tended to be remarkably receptive to the adoption and dissemination of native medical practices in their African, Asian, and South American enclaves.³ Indeed, as researcher Sonja Brentjes points out in her contribution to this volume, even Portuguese historians of medicine have discounted or entirely ignored important contributions to Portuguese colonial-era medical practices that originated in predominantly Islamic regions, such as the Persian Gulf, Red Sea or North Africa.⁴ Thus, this work aims to add appreciably to a scholarly understanding of how healing knowledge was transferred from one culture to another within the Portuguese colonial context.

This paper will examine direct primary evidence for how that transfer and diffusion of medical knowledge occurred by focusing on numerous descriptive ethno-botanical texts produced in Portuguese colonies during the early modern period. It will consider the worldwide implications of such media for the transfer and evolution of healing practices in the Lusophone world, exploring the role of these texts as conduits of multicultural medical knowledge, wherein European and Middle Eastern, Indian, African, Malaysian, Indonesian, Chinese and South American concepts about healing were transmitted and often blended. In so doing, this work engages key questions treated in the work by António Barrera-Osorio (2013) namely, how do useful native methods or wisdom “jump” cul-

²Before admission to the Order, all candidates for the Company of Jesus were required to undertake at least one month of practical hospital training, and as missionaries were expected to attend to the health of their community. See O’Neill and Dominguez (2001, 2601–2602) and Leite (1953, 83–89). See also the Shembaganur Province Archives, Sacred Heart College, Kodaikanal, Tamil Nadu, India; Annual Jesuit Missionary Letters of the Maduri Province; Shelf 211, Book 34 (1606–1643), pp. 30–44, 47–50, 52–53 and 78; also Shelf 211, Book 102 (1655–1666), pp. 87–91 and 221–227.

³In English, key recent works include Maehle (1999); Schiebinger (2004); Weaver (2006); Cook (2007); Delbourgo and Dew (2008); Bleichmar et al. (2009).

⁴See chapter 4 by S. Brentjes.

tural boundaries during colonial encounters, and at what point does circulated “information” about indigenous practices and healing substances become part of an established European body of “knowledge”? Barrera-Osario considers these problems in the context of knowledge about medicinal plants that originated in the Spanish colonies in the Americas, from whence it moved to continental Spain, on to the Netherlands, and generally across Europe. Barrera-Osario sees in these sixteenth-century knowledge transfers an incipient practical empirical method, which led in time to a fully manifested Scientific Revolution. As we shall see, the Portuguese experience was analogous, but the impact of some rare works remained restricted to Lusophone regions, and so they were not as directly influential on scientific thought in northern Europe.

By the mid-seventeenth century, practical medicine in Portuguese colonial enclaves had become thoroughly hybridized, with applied remedies in colonial health institutions (whether state-sponsored or religious) relying significantly on indigenous medicinal substances and methods, derived from various disparate native healing traditions (Walker 2009, 266–270). This paper considers these missionary and medical practitioners’ texts, their intermingled medical cosmology, and the colonial environment that placed so much importance on the remedies supplied through indigenous healing plants. Further, the adoption of various medicinal plants cultivated in Portuguese colonial hospital gardens (often far from their native lands of origin), and an understanding of their applications and effects, depended on the blended colonial social context in which medical practitioners who employed these plants operated.

Exchanges of medical knowledge in colonial settings occurred on a variety of levels; in any given case, much depended on the preexisting conceits and knowledge, skills, and requirements of the individuals directly involved, be they European colonists, indigenous peoples, or non-European workers brought by the Portuguese into contact with disparate native peoples in a context of colonial demographic comingling (Russell-Wood 1992, 106–122). In the missionary context, protracted exchanges aimed at creating religious converts were often substantially more complex—and intellectually more profound—than those rapid transactions conducted between sick Portuguese soldiers, bandeirante explorers deep in the bush, a harried colonial provincial official, or even a ship’s or regimental surgeon, and the native Hindu *vaidyas*, Muslim *hakims* or animist shamans with whom they interacted (Walker 2013). Merchants seeking purportedly efficacious drugs in colonial market places constitute another dimension of medical knowledge procurement; healing commodities had to be sound (apparently unadulterated and with a reputation for efficacy) in order to attract buyers and yield sustained profits. Like their martial or mercantile coreligionists, Jesuit priests and lay missionaries often relied on indigenous cures to treat their own

tropical maladies contracted in the service of the Church; however, their greater patience and investment of time for evangelizing ends usually resulted in a more subtly nuanced and detailed cultural and medical understanding of regional healing methods (Santos Filho 1947, vol. 1, 48–50 and vol. 2, 26–30).⁵

Throughout the initial “first contact” period of dynamic cultural blending and information exchange that occurred in any given colonial setting (c. 1440–1580, but varying according to region), Portuguese military and missionary operational considerations typically fueled interest in indigenous medical practices. At the outset, inquiries into local healing folkways often grew from an immediate, pragmatic European need to treat injuries and unfamiliar tropical diseases. Mercantile considerations provided a close secondary motivation for medical prospecting; commerce in healing plants grew as the colonial system expanded and matured (Chambers and Gillespie 2000, 228–231). Thus, systematic use and dissemination of indigenous medicinal plants collected or cultivated specifically for that purpose began almost immediately, usually as a consequence of first contact, and increased soon after permanent colonial settlement began (Henriques and Margarido 1989, 75–77).

Indeed, mariner’s accounts from the earliest Portuguese explorations show that identifying useful local medicines and remedies was a top priority. Sailors on Pedro Álvares Cabral’s voyage (1499–1500), during the first Portuguese contact with Brazil, carefully observed how indigenous South American peoples consumed roots, nuts, berries, seeds and fruits, employing them for health and sustenance.⁶ In 1511, an apothecary of the royal household, Tomé Pires, was sent to Asia specifically as an agent to seek and secure drugs and remedies; toward this end he was made chief of the first European diplomatic mission to the Ming Chinese court (Cortese 2005, vol. 1, xviii–xlv and vol. 2, 512–518). In 1518, Portuguese merchant traveller Duarte Barbosa described the thriving spice and drug markets at Basra and Ormuz, Persian Gulf trading ports, with an eye toward developing trade in such medicinal wares (Dames 2002 [1918–1921], 88–90, 90–95). These expeditions, after all, were commercial ventures, the ultimate objective of which was to obtain spices and drugs in Asia; official crown expedition orders typically dictated that such voyages seek similar practical, fungible commodities, including specifically medicines, at every anchorage or port of call.⁷ In the colonial military sphere, the exigencies of survival—keeping personnel losses

⁵ Also Shembaganur Province Archives; Annual Jesuit Missionary Letters of the Maduri Province; Shelf 211, Book 34 (1606–1643), pp. 30–44, 47–50, 52–53 and 78, Shelf 211, Book 102 (1655–1666), pp. 87–91 and 221–227.

⁶ “Letter of Pedro Vaz de Caminha to King Manuel” (1 May 1500). In Greenlee (1995, 24–25, 28–29, 59–60).

⁷ “Fragment of Instructions to Pedro Álvares Cabral when he went to India as Commander of a Fleet” in Greenlee (1995, 169–185); see also pp. x, 56–57, 91–94.

through disease or injury to a minimum—drove additional inquiries into potential benefits of native medicine.⁸ In part because of a clear necessity to reduce disease and wound casualties among sailors, soldiers, settlers, and slaves⁹—strategic human resources whose loss far from home could not easily be compensated—Portuguese healing practices in the colonies displayed a tendency toward utilitarian experimentation. That is, colonial medical practitioners were far more eclectic and open to indigenous practices than were contemporary physicians and surgeons in continental Portugal, especially if native drugs seemed to promise or demonstrate genuine effectiveness.¹⁰ Due to severely limited conventional European medical resources in their colonial enclaves and sustained exposure to indigenous methods, Portuguese medical practice throughout the empire was less rigid and more experimental than that taught according to the notoriously inflexible curriculum of Coimbra University, home to Portugal's sole academic faculty of medicine during the early modern period.¹¹ Until long-overdue reforms, introduced by royal compulsion in 1772, rationalized and revitalized instruction at Coimbra, medical professors were obliged to resort to rote recitation of archaic commentaries on the writings of the ancient and medieval authorities: Galen, Hippocrates, Rhazes, and Avicenna.¹²

That said, in the cosmopolitan port cities like Lisbon and Porto, there was considerable openness to new medical knowledge among some physicians and surgeons—especially those who had served in the colonies and returned home with practical experience and a cache of tropical medicines to use or sell, or who maintained correspondence with colleagues (often “New Christian” conversos fleeing Inquisition prosecution) who had left Portugal in the seventeenth and eighteenth centuries to practice or study in Britain, France, the Netherlands or Russia. In Lisbon, the *Todos-os-Santos* (“All Saints”) Royal Hospital trained physicians and surgeons in applied medical techniques, often with reference to methods learned in the colonial tropics (Walker 2005, 103–107, 118–134). All Saints was

⁸The Hospital Militar de Goa was founded in 1520 with this specific purpose in mind, Fonseca (1994, 228). In 1588, post commander Jerónimo de Quadros noted an insufficient and unreliable supply of opium for his men as one of the principle challenges in his administration of the fortress of Comorão in the Persian Gulf; Public Records Office, London, SP89/2, ff. 166–203 (I am grateful to Professor Felipe Fernandez-Armesto for this reference); Historical Archive of Goa (hereafter HAG) *Monções de Reino* (hereafter MR) 115, ff. 88r–89r.

⁹Seventeenth-century author Ambrósio Fernandes Brandão refers specifically to indigenous medicines used in attempts to cure Europeans in Brazil and their African slaves, whose deaths he deemed to be economically damaging for the colony. See Fernandes Brandão (1987, 107–113). The original manuscript is held in the Biblioteca Nacional de Lisboa, Portugal.

¹⁰Juan Pimentel (2000, 23–25) also notes this tendency for scientific innovation to be more active in the early modern Iberian colonies than in the metropole.

¹¹António Barrera-Osorio (2008, 178–180) notes a similar qualitative difference between the colonies and metropole in the spirit and experience of naturalist or botanical inquiry.

¹²For further discussion on this point, see Walker (2005, 99–103).

notable for having a ward specifically dedicated to the treatment of tropical diseases, as early as the sixteenth century, the remedies for which typically included imported native medicines.¹³ These circumstances tended to counter the conservatism of Coimbra's outmoded course of medical study. In the colonies, pressing need overcame prejudice and religious conservatism; far from restrictive institutional oversight, medical experimentation flourished in Goa, Macau and Salvador da Bahia. Through the normal flow of colonial commerce and personnel, such innovative adaptations of non-western medical substances and practices gradually made their way to the metropole.¹⁴

Early Portuguese Transfer of Information about Asian and Indonesian Drugs to Europe

Garcia da Orta, *Coloquios dos Simples e Drogas e cousas medicianais da Índia...* (Goa: Colégio de São João, 1563)

Some telling insight into how information about indigenous medicine traveled by word of mouth, manuscript and printed text in the Portuguese colonial world can be found in the seminal descriptive dialogues about Asian medicinal plants written by the famous Iberian colonial physician Garcia da Orta (Goa, 1563 [1563]). This publication, and the various subsequent unauthorized versions of his text, introduced Europeans to many of the medicinal plants and drugs commonly employed in Eastern healing. Although a range of Asian medicines had been known in Western Europe since ancient times, Garcia da Orta's work—a detailed, critical assessment of the effects of drugs found in the East Indies compiled firsthand, on site, using native sources—conveyed a significantly more profound and nuanced understanding of their original uses and characteristics as indigenous healers understood them.

Garcia da Orta, born into a “New Christian” converso family, trained in medicine at Salamanca and practiced medicine in Lisbon before entering the service of the Portuguese crown and sailing to Goa in 1534, where he remained for the rest of his life. Orta served as the personal physician to several Viceroys and Governors of Portuguese India, as well as to the Sultan of Ahmadnagar. He

¹³ Carmona (1954, 498–507). See also Pires and Vaz (1991, 168).

¹⁴ Júnia Ferreira Furtado (2008, 27–130) describes the rise of a distinct “colonial empiricism” through material and intellectual exchanges between Luso-Brazilian barber-surgeons, indigenous peoples and African slaves who were intent on collecting and testing plants and drugs; the barber-surgeons in Brazil often used their direct knowledge of South American flora to increase their authority over medical practitioners in Europe, highlighting their own actions and obscuring the contributions of Amerindians or Afro-Brazilians who had originally provided their information.

enjoyed the friendship and professional collaboration of Hindus, Muslims and Christians alike (Ficalho 1983, 221–247, 281–285; Russell-Wood 1992, 83–84).

The culmination of Orta's labors, *Colloquies on the Simples and Drugs and medicinal things of India*, saw rapid and wide distribution in Europe. Published in Goa in 1563 (only the second European book to be printed in India), this treatise remained the definitive work on Asian medicine in the Portuguese maritime empire until the nineteenth century. The full text was published only in Portuguese, which limited its circulation. However, the prominent botanist Charles L'écluse (Clusius 1567) translated much of Orta's original material into Latin, reformatted it entirely (dropping the dialog structure), and published it without permission in Antwerp in 1567. Incomplete editions in English, French, and Italian followed (Alves Dias 2013). L'écluse also later appropriated and reprinted work from the Portuguese physician and botanist Cristovão da Costa, whose *Tractado de las drogas y medicinas de las Indias Orientales*, published in 1578, followed Orta's work closely, but expanded upon and corrected some of Orta's information (da Costa had traveled more broadly throughout the Portuguese Estado da Índia than had Orta, so he was able to better report on the efficacy and use of some medicinal plants) (Russell-Wood 1992, 149–150). The Dutch merchant-traveler Linschoten included significant information about Asian medicines, all cribbed from Orta's book, in his exceptionally popular work about India (Amsterdam, 1596) (Huyghen van Linschoten 1596; Burnell and Tiele 1885). Thus, through translations and appropriation, the knowledge about Indian medicine contained in Garcia da Orta's original treatise quickly achieved broad circulation in Europe.

Colloquies on the Simples and Drugs [...] of India contains thorough notes about fifty-nine different drugs and medicinal preparations, all of them either native to India or observed in use there during the author's perambulations. "India," of course, is broadly defined; for Orta and his European contemporaries, the geographical area of the Indies comprised much of Asia and Indonesia. Moreover, in its presentation of information about South Asian medical techniques and remedies, Orta's work is essentially an Indian text, despite having been collected and recorded by a Western physician (Grove 1995, 77–80). That is, the book carefully records, preserves, and conveys a distinctly indigenous outlook toward healing, even if viewed through the filter of Orta's interpretation. The *Colloquies* emerged from Orta's personal friendship and professional interaction with a range of medical practitioners in western India, from Malayali-speaking Brahmin doctors in the port cities of Kerala, to Gujarati and Deccan physicians he encountered in Bombay, to lower-caste Hindu healers at Goa and Ceylon (Markham 1913, ix; Ficalho 1983, 221–247, 281–285).

Orta credited Malayali medical practitioners and their Ayurvedic-influenced medicine with being of particular importance to his own training. Throughout his

text, Orta maintained usage of many Malayali words for medicinal substances because “this was the first land [I] knew” (Ficalho 1983, 97). However, his medicinal specimens at Goa were collected and catalogued by a local Konkani-speaking “slave girl” named Antónia—circumstances that inevitably shaped Orta’s perception of the contours of indigenous medical culture in the region where he made his home (Cagle 2012, 181–187; Markham 1913, xiii).

Crucial to the interpretation of Garcia da Orta’s text, however, is appreciating the dual role that the book served. In addition to being a didactic pharmacological work, it is a commercial catalogue of medicines, meant to stimulate demand in Europe for the substances it describes. Garcia da Orta also engaged actively in the vending of medicines; his own fortunes depended in no small measure on these sales. He arrived in Goa with a large personal consignment of drugs from Europe, for which he knew there would be a ready market in India (Cook 2013). Writing his *Colloquies* was thus undertaken with two purposes in mind—to teach and to sell. As with later Portuguese texts that disseminated indigenous knowledge about healing, be they imprints or manuscripts, separating these two intertwined motives is impossible.

The Society of Jesus and the Dissemination of Indigenous Medical Knowledge

Missionary priests were typically among the first learned Portuguese to penetrate the interior of colonized coastal regions. Among the various brotherhoods, the Society of Jesus developed a well-deserved reputation for mastering indigenous languages, customs and especially medical knowledge, and for conveying that knowledge around the Lusophone world. In Asia, they established their first missionary infirmaries or pharmacies at Goa, India and Macau, China in 1542 and 1563, respectively; (Saldanha 1990, 46–48) in Brazil, the Jesuits arrived in Salvador in 1549 and founded a mission settlement near present-day São Paulo in 1554 (Santos Filho 1947, vol. 1, 337; Smith 2002, 3). As outsiders in a strange tropical disease environment, the Europeans often found themselves dependent on the assistance of indigenous medical practitioners to heal them of regional maladies or afflictions.¹⁵ From their earliest experiences in Africa and Asia, missionaries recognized that native cultures harbored a great store of folk knowledge about local medicinal plants, many of which seemed to exhibit efficacy and commercial promise. The same intellectual proclivities that led missionaries to study indigenous languages and customs—strategic knowledge for winning conversions—led them to gather detailed information about native healing arts: traditional local remedies and their natural ingredients. Within a generation of initial

¹⁵Santos Filho (1947, vol. 1, 48–50; vol. 2, 26–30). See also BNRJ, I–15, 02, 026, ff. 1–280.

Portuguese occupation, missionaries began to write and circulate protracted descriptions of indigenous healing plants, including advice about how to identify, prepare and apply native drugs.¹⁶

As a core component of their evangelical activities, most missionary orders founded infirmaries and apothecaries in colonial enclaves throughout the Luso-phone world to treat the sick and help win conversions. There they gathered, compounded and dispensed imported or local drugs, and sold prepared remedies using ingredients procured from Europe, India, Brazil and other Portuguese imperial regions.¹⁷ Taken together, such remedies represented a gradually developing fusion—a distinct Luso-colonial medical culture.¹⁸ Anywhere across the Luso-phone world, this process of syncretism followed a similar pattern.

Over time, the Jesuit missionary brotherhood in the Portuguese colonies developed and codified the primary European body of expertise about a vast range of indigenous medicines. Recognizing the potential for profit from commercializing native drugs, the Jesuits quickly became the principal vendors and disseminators of these healing commodities, and the specialized knowledge of how to prepare and use them, throughout the Portuguese maritime world. They systematically gathered empirical and practical ethno-botanical information, beginning almost from the moment of their arrival in colonized regions in the sixteenth century. Their multiple extant manuscript field manuals from various periods and locations detail indigenous medicinal plants and remedies with striking precision. In addition, these works evince a remarkable respect for local healing knowledge, and even a subtle though tacit regard or admiration for indigenous epistemological conceits.¹⁹

In continental Portugal during the early modern period, missionary orders, or monastic institutions and the colleges associated with them, dominated the apothecary profession at the hub of the empire, and so controlled a virtual monopoly of the lucrative trade in medicinal substances. In the case of medicines arriving from Brazil and the Estado da Índia, Jesuit druggists (*boticários*) in particular enjoyed a clear advantage, as they could rely on their co-religionist

¹⁶See, for example, the Bibliothèque nationale de France (Paris), Department of Manuscripts, Fonds Portugais No. 59, *Breve compendio de varias receitas de medicina* (1598), ff. 2–79v; also BNRJ, Brazil; Manuscripts Division; No. I–15, 02, 026, *Curiosidade; Un Libro de Medicina escrito por los Jesuitas en las Misiones del Paraguay en el año 1580*, ff. 1–280, and Archivum Romanum Societatis Iesu (ARSI, Rome, Italy), Opp. NN. 17, *Colecção de Varias Receitas e Segredos Particulares das Principais Boticas da Nossa Companhia de Portugal, da India, de Macao e do Brazil* (1766), pp. 1–494.

¹⁷For examples drawn from the *Estado da Índia*, see HAG No. 9477, ff. 43, 58, 90 and 141. See also HAG 7887, ff. 2v, 7r, 9v and 40–43.

¹⁸For a discussion about the conceptual problems raised by use of the term “hybridity” see Burke (2009, 34–65).

¹⁹See BNRJ, Brazil; Manuscripts Division; No. I–15, 02, 026.

associates in Salvador da Bahia, Goa and Macau to procure and ship consignments of medicinal plants or prepared medications to their brethren throughout the Portuguese-speaking world. The Jesuit brothers trafficked in all types of indigenous remedies on a truly global scale, sending consignments of drugs between Brazil, Africa, India, China, and Europe. The market for colonial medicines in continental Portugal was largely their exclusive domain for over two hundred years (Sousa Dias and Rui Pita 1994, 18, 21).

For a comparative view of the commercialization of medicinal substances in the Spanish colonies in the Americas, consider the analysis offered by researcher Stefanie Gänger for this volume. In the Spanish context, crown authorities maintained a much tighter and direct control over trade in medicines from the empire. Instead of missionary orders' apothecaries, colonial medicines available in Spain were handled largely but not exclusively by Madrid's Royal Pharmacy, which had "privileged access to medicinal plants and plant-based remedies from the crown's American possessions" (Gänger 2015). The Spanish Royal Pharmacy had been founded during the initial stages of American colonization to cater to the health of the monarch, the royal family and personnel of the royal court, but by the eighteenth century this institution controlled most of the registered trade in prepared medicines from the Spanish New World territories available in the metropole. As in the Portuguese sphere, missionary pharmacies held a considerable share of drug marketing within Spanish global trade networks, though illicit trade carried by foreign interlopers and smugglers played a role in disseminating such medicines, as well (Gänger 2015).

As near monopolists in the global trade of indigenous medicinal substances within the Portuguese mercantile system during the seventeenth and eighteenth centuries, missionary orders relied on this revenue to support their evangelical operations throughout the Portuguese overseas territories (Sousa Dias and Rui Pita 1994, 19–20). Jesuit padres and lay clergy in South America, as elsewhere in the Iberian colonial world, excelled in seeking out and experimenting with indigenous medicinal substances, knowledge which they carefully recorded in manuscript texts which circulated amongst their brethren. Even their secular contemporaries acknowledged the peripatetic, highly trained Jesuits as the unparalleled leaders in indigenous medical prospecting (Santos Filho 1947, vol. II, 26–30).

Most permanent Jesuit colonial missions operated medical facilities—typically an infirmary and a pharmacy—from which they dispensed medical compositions for a profit. Throughout incipient colonial settlements in early modern Brazil, for example, Jesuit mission apothecary shops were common. By the end of the seventeenth century, the Society of Jesus had opened thirteen medical installations in coastal communities and in the interior of the colony. By the mid-eighteenth century, Jesuit medical activities had expanded to include thirty

pharmacies and infirmaries across Brazil (Edler 2006, 33). Most communities of any regional importance had been pioneered by and settled around a Jesuit mission; similar Jesuit hospitals were founded early on in Goa, Mozambique Island and Macau. The resident padres were often the sole resource for learned medical consultations in any given colonial province, and in many enclaves, Jesuit pharmacies were the only source from which to purchase imported drugs or prepared medical remedies (Santos Filho 1947, vol. 1, 112). The Jesuit pharmacy of the College of São Paulo in Macau, for example, became for nearly three centuries the primary, indispensable supplier of drugs to stock shipboard medical chests for every vessel from the West trading in the Pearl River Delta and Canton (Amaro 1992, 7–11).

Contrary to what is often supposed, the Jesuits and other missionary orders were not bound by a strict prohibition on engaging in commerce. On the contrary, canon law stipulated only that ecclesiastics could not purchase objects produced by others with the intent to sell them for profit; they could, however, vend goods that they had made, grown or developed themselves (Alden 1996, 529, esp. note 2). In the case of trade goods like medicines—wares that the missionaries directly gathered and blended, and the profits from which commerce contributed to their evangelical mission—Church and state authorities had no official grounds for objection (though many colonial merchants complained that the Jesuits took advantage of their privileged position to glean large revenues) (Borges 1994, 41, 86). This is precisely why the Jesuits dealt so aggressively and widely in medical drugs (including chocolate); theoretically they were barred from profiting on virtually any other type of trade.²⁰ Indeed, it was precisely because the Jesuits were restricted from trading in conventional commercial goods that they turned to medicines and drugs as a source of revenue. Because healing was a recognized, approved dimension of their missionary activities, and because, by long precedent, infirmaries and dispensing pharmacies had been part of the missionary establishment, evangelical brotherhoods were able to employ their global networks of pharmacies to generate revenue in a way that was perceived to be spiritually legitimate, orthodox and legal.

From this point, the paper will proceed by considering in turn individual manuscripts produced in the Portuguese colonies specifically to convey and disseminate knowledge about indigenous healing substances and medicines. These are fundamental “conduit” documents. Contextual commentary will focus on their provenance, content and significance. In general, the narrative will proceed chronologically.

²⁰In practice, of course, the Jesuits often did engage in various types of commercial activity, often with crown consent, but usually in modest volume. See Alden (1996, 529–531, 540–544); see also Borges (1994, 41, 86).

Anonymous, *Curiosidade; Un Libro de Medicina escrito por los Jesuitas en las Misiones del Paraguay en el Año 1580*

In approximately 1580, Jesuits working in South America compiled a detailed manuscript volume of diverse native remedies found in Paraguay, Chile and Brazil.²¹ The tome is one of the oldest known Jesuit medical handbooks composed from notes made in the mission fields, but it is typical of other handwritten medical field guides that Jesuit missionaries produced wherever they interacted with indigenous peoples.²² A meticulous copy of this manuscript, probably made in the late seventeenth or early eighteenth century by a skilled scribe, resides in the National Library of Rio de Janeiro. Its 280 folios contain an extraordinary amount of ethnographic information about South American healing techniques and pharmacological botany. Most of the work focuses on Brazil; though compiled in no discernable order, it includes an index listing alphabetically more than two hundred medicinal plants discussed in the volume, naming them first in Castilian, and then providing a linguistic concordance with equivalents in the native Tupí and Guaraní languages.²³

The manuscript opens with a thirty-page prologue that explains how to recognize medicinal plants growing in the wild, assess their healing properties and prepare them as curatives through cooking or drying. The prologue describes how best to preserve the prepared medicines to ensure their long-term efficacy, and gives advice about how to successfully administer these remedies. Scores of medicinal plants and roots are explicated, including common Amazonian samples like copaiba and ipecacuanha.²⁴ Interestingly, however, the work displays clear evidence of early cross-cultural medical influences from elsewhere in the empire: in addition to South American *materia medica*, it includes minute instructions for the preparation and administration of plant-based drugs that the Portuguese had imported or transplanted from India and Ceylon, such as nutmeg, pepper, cloves and cinnamon.²⁵

This remarkable tome's very first entry describes the "Virtues of Cacao," or chocolate, made from *Theobroma cacao*, a plant native to the Amazon River headwaters and basin.²⁶ According to the Jesuits' text, prepared chocolate had the

²¹Biblioteca Nacional do Rio de Janeiro (BNRJ), Brazil.

²²See, for example, the BNF, Manuscripts, Fonds Portugais No. 59 (1598), ff. 2–79v; also ARSI, Opp. NN. 17 (1766), pp. 1–494.

²³BNRJ, Manuscripts Division; No. I–15, 02, 026; ink on paper, hard cardboard binding (not original), approximately 14 by 22 centimeters, 280 folios, un-numbered manuscript pages at end of volume. The work is apparently a "fair copy" made by a scribe or Jesuit priest.

²⁴See also Edler (2006, 26).

²⁵BNRJ, Manuscripts Division; No. I–15, 02, 026, ff. 1–7.

²⁶Genetic research has established the origins of all cacao in the headwaters of the Amazon River. See Motamayor, Risterucci, et al. (2002, 380–386).

medical capacity to “open the [body’s] passages [...] comfort the mind, the stomach, and the liver, aid asthmatics [...] and those with cataracts [...]” among other salubrious qualities.²⁷ Through their contacts with native peoples, the Society of Jesus had long known about chocolate as a medicinal substance. Índios in Brazil taught that cacao had medicinal benefits; they recognized chocolate as a mild stimulant that could provide sustaining energy to combat hunger and fatigue.²⁸ This indigenous knowledge provided an added incentive to cultivate cacao trees at Jesuit mission communities in South America.

Jesuit missionaries in fact became the primary producers of cacao in Brazil, cultivating large plantations; the brotherhood monopolized the export and sale of chocolate as a medicinal commodity until the mid-eighteenth century (Walker 2007). The Jesuits also learned how to extract cocoa butter from cacao and sold it as a remedy for skin maladies. By the late eighteenth century, medicinal cocoa butter (*manteiga de cacão*) was being used therapeutically in colonial military hospitals and infirmaries throughout the Portuguese empire. Colonial soldiers and officials in the tropics soothed chafed, dry or abraded skin with cocoa butter; they employed it as a standard regular treatment for heat rashes, or more serious skin disorders like shingles. In Portuguese enclaves in India, missionary pharmacies stocked quantities of Brazilian cocoa butter for daily application to infirmery patients, and for retail distribution to the general population; the *botica* (pharmacy) of the Convent of Santo Agostinho in Goa listed regular monthly purchases of *manteiga de cacão* between 1807 and 1835.²⁹ Cocoa butter from Brazil became a preeminent topical remedy; it could be found in the stocks of colonial pharmacies from Macau to Timor, Mozambique and São Tomé, and in the medical chests of most ships of the Portuguese India fleet, as well, during the late eighteenth and early nineteenth centuries.³⁰

Anonymous, *Breve compendio de varias receitas de medicina* (1596)

Another early effort to expand knowledge within the Portuguese empire about the medicinal uses of indigenous plants is evident in a report compiled in the eastern colonies in 1596 and remanded to Lisbon for the edification of King Filipe II and his ministers, apparently in hopes of stimulating trade in useful medicines from

²⁷BNRJ, Manuscripts Division; No. I-15, 02, 026, *Capítulo* I, 1.

²⁸See previous footnote. See also Clarence-Smith (2002, 10–11); Dillinger et al. (2000); S. D. Coe and M. D. Coe (1996, 121–129, 167–169); Walker (2009b).

²⁹HAG; Manuscripts, vol. 8030.

³⁰AHU, São Tomé and Príncipe Collection; cx. 55, doc. 75.

the Portuguese overseas colonies.³¹ This compendium of medical recipes and the South Asian herbal, animal or mineral substances from which they were made is a lengthy, meticulous account of contemporary healing techniques in India, written by royal order in Goa during the administration of Matias de Albuquerque, Viceroy of the Estado da Índia at the end of the sixteenth century.³² Consistent with the mixed motivations of Portuguese medical knowledge acquisition and transfer, it was also intended specifically to facilitate the dissemination of Indian healing methods to other parts of the Portuguese maritime empire, where they could be applied to safeguard the precarious health of colonial troops and functionaries in the tropics. This report was most likely composed by a Jesuit attached to the Hospital Militar de Goa, the main colonial health facility, which operated under Jesuit administration after 1579 (Alden 1996, 338).

However, this document was destined for broader distribution within the Portuguese sphere and beyond. A copy of the compendium, made by a Jesuit missionary priest a century after its initial composition, is now found in the Bibliothèque Nationale de France.³³ Flemish Padre François de Rougemont, awaiting his departure in Lisbon for Macau in the mid-seventeenth century, apparently copied the richly informative document for his personal use in the mission fields of China (he arrived to Macau in 1658).³⁴ Most of the text is composed of remedies and treatments for specified named conditions, symptoms or maladies. Thus, the compendium has a diagnostic purpose for tropical illnesses, as well as a didactic objective regarding medical plants, minerals and herbs. The latter half of Padre Rougemont's 155-folio bound manuscript includes notes, apparently added in the mission fields, about supplementary Chinese remedies and entries of medical information to augment his original text, including Chinese, Dutch and French language passages.³⁵ The tome shows signs of frequent use, apparently having been consulted to heal the sick in the Far East before being returned to the French national library in the late nineteenth century. So, in this remarkable text we see a late seventeenth-century French-speaking Flemish Jesuit copying a late sixteenth-century Portuguese text about Indian medicine for use in China until at least the late eighteenth century, moving medical information about South Asia to East Asia and back to France.

³¹Bibliothèque nationale de France, Département des Manuscrits, Fonds Portugais No. 59, *Esperiencias das hervas orientaes que Sua Magestade mandou fazer ao vizorey Mathias de Albuquerque, anno de 1596*, ff. 29–77v.

³²See previous footnote.

³³Bibliothèque Nationale de France, Département des Manuscrits, Fonds Portugais No. 59, *Breve compendio de varias receitas de medicina*, ff. 2–79v.

³⁴I am grateful to Oana Baboi of the University of Toronto for this reference.

³⁵*Ibid.*, ff. 79–155 (Chinese text on ff. 151v–152; French text on ff. 124–127v).

Clearly, in 1596 there was an obvious additional commercial motivation for creating this comprehensive list of eastern medicinal recipes. Portuguese merchant interests (and the Spanish monarchy then ensconced on the Portuguese throne) hoped to profit from such remedies by selling them in metropolitan Iberian markets and colonial regions in Africa and the Americas, but also to rival colonial powers in Europe. At that time, Portuguese colonial interests held a virtual monopoly on both the sources for medically efficacious Asian plants and much of the knowledge about how to apply them. Portuguese spice and drug merchants (ecclesiastical and secular) thus positioned themselves deliberately to operate as the global conduit for Asian medical information, expressed in European medical terms and in a European language.

Manuel Godinho de Erédia, *Suma de Árvores e Plantas da Índia Intra Ganges* (Goa 1612)

Another early colonial Portuguese attempt to create a compendium of medicinal plants from South Asia was that of Manuel Godinho de Erédia (1558?–1623),³⁶ a Malay-Portuguese military draftsman, cartographer, and adventurer who developed an interest in botany while travelling in the Estado da Índia. His extraordinary work, a herbal entitled *Summary of the Trees and Plants of India beyond the Ganges*, was compiled in Goa in 1612 but never published until modern times (Erédia 2001). The manuscript, which has resided in the Abby de Tongerlo in Belgium since the mid-eighteenth century, contains seventy-four folio-sized illustrations of Indian plants, the majority of them having medicinal uses described overleaf in the author's accompanying notations. Richly colored and finely drawn (the images are far superior to the woodcuts used in Cristovão da Costa's text of 1578), Erédia's manuscript was intended to provide Europeans—specifically the colonial elites who were his patrons—with an accurate idea of the appearance and application of what, in Erédia's experience, were the most frequently employed and useful South Asian healing plants. While employed in the service of the Portuguese crown to record military installations in Asia, Erédia's work may have been intended primarily to help colonial officials preserve the lives of garrison soldiers in tropical imperial strongholds.³⁷ However, the manuscript could have served equally well as a tool for merchants hoping to identify Asian medical commodities for shipment (Erédia 2001, 9–26).

Erédia's status as a mixed-race agent of the Portuguese empire (born of a Luso-Spanish father and Malaysian mother; he grew up in Malacca) perhaps made

³⁶Manuscript held in the Abby de Tongerlo, Belgium.

³⁷Manuel Godinho de Erédia, *Lyvro de Plantaformas das Fortalezas da Índia* (circa 1622–1640) (manuscript; Oeiras, Portugal: Biblioteca do forte de São Julião da Barra; Ministério da Defesa Nacional).

him more aware of the cultural context and procedural subtleties of the *materia medica* which he compiled; the quality of his botanical images were unmatched until the publication of the Dutch botanist Hendrik van Reede's twelve-volume *Hortus Malabaricus*, compiled in Cochin between 1678 and 1693. Although the impact of Erédia's text was severely limited by its not having been reprinted or widely circulated (instead it fell into obscurity), the work must have been edifying to those who kept it safe for over a century before depositing it in a monastery in Flanders (Erédia 2001, 9–26).

In her contribution Florike Egmond (2013) also analyzes the didactic illustrations that Manuel Godinho de Erédia created, noting that his expertise as a naturalist was far superior to that of a casual observer. Egmond argues that Godinho may have “intended his album to be printed as a kind of handbook for apothecaries” because he carefully recorded specific Asian plants used in native remedies, including commentary on the circumstances of their proper application. He also offered his informed observations about the migrations and importation of various plants into India. With good reason, Egmond speculates that Godinho's meticulous methodology may be attributed to the time he spent studying with Jesuit mentors in Goa, but she also notes that he appears to have drawn some of his information from Garcia da Orta's earlier work. It may be the case, though, that Godinho, as a native raised in Asian trade ports and familiar with such regional healing techniques, serves to independently confirm methods that Orta had first reported half a century before.

Moving into the Eighteenth Century: Increasingly Systematic and Comprehensive Efforts

Anonymous, Coleção de Varias Receitas e Segredos Particulares das Principais Boticas da Nossa Companhia de Portugal, da India, de Macao e do Brazil (1766)

One exceptional document held in the Archivum Romanum Societatis Iesu (Society of Jesus Archive, Rome)³⁸ provides unparalleled insights into the elevated and genuinely global level of circulation of medical information achieved by the Jesuit Brotherhood. In 1766, a few years after the Jesuit Order was expelled by royal decree from all Portuguese territories (1759–1760), a scholarly Jesuit apothecary in Rome compiled this work, one of the most remarkable medical documents of the Enlightenment era. This document is a compendium of medicinal recipes taken from all principal Jesuit mission pharmacies from across the Portuguese empire, deliberately recorded for posterity in the mid-eighteenth century. Stated

³⁸Manuscript held at the ARSI, Opp. NN. 17, 1–494.

unequivocally in the volume introduction is the caveat that such valuable medical knowledge should be codified and preserved, but not shared outside the Jesuit order, in order to safeguard future profits to be gained from such rare pharmacological knowledge (*Colecção de Varias Receitas*: 2–3).

For purposes of understanding the scale of dissemination of medical knowledge throughout the Portuguese colonial world, this tome is a keystone document. Its title (in English) is: *A Collection of Various Recipes and Particular Secrets of the Principal Apothecaries of Our [Jesuit] Company in Portugal, India, Macau and Brazil*. The bound manuscript is 688 octavo pages in length and contains over 300 detailed medical recipes (ingredients; proportions; mixing instructions; applications), nearly all employing a mélange of indigenous healing plants borrowed from native traditions throughout the Portuguese imperial system. The document has never been published or systematically transcribed; only a few brief excerpts of it have been published in facsimile, though the entire volume was recently digitized. A careful transcription of the full contents of this document does exist, however, made by mid-twentieth-century Luso-Brazilian Jesuit researcher Serafim Leite, S. J. (1953, 284–293).³⁹

This unique Jesuit medical compilation held in their Rome archives offers a singular overview of Jesuit medicinal recipes employing diverse, blended indigenous healing knowledge collected from across the Portuguese colonial world. Thus, this unparalleled manuscript is a unifying document, representing and demonstrating in a single work the extent of globalization and cross-cultural hybridization achieved in Portuguese imperial medical practices.

But the learned priests of the Society of Jesus were not the only ones to see the potential utility of a comprehensive program to gather and codify global medical information. Toward the end of the eighteenth century, spurred perhaps by a growing awareness of systematic Enlightenment-era approaches to knowledge (Simões, Carneiro, and Diogo 1999; Caneiro, Simões, and Diogo 2000), the Portuguese monarchy and colonial administrators in Lisbon also began to take an increasingly active interest in seeking useful medicinal plants from their colonies in South America and Asia. Sustained heavy losses of human capital in the tropical colonies—not only among European soldiers, administrators, and settlers, but also among valuable enslaved persons shipped as merchandise across the Atlantic and Indian Oceans—seems to have prompted this renewed initiative. Typically during the sixteenth to eighteenth centuries, new European or African slave arrivals to the Portuguese colonies suffered terribly high rates of mortality, their ranks shrinking rapidly during the first year of relocation due to brutal work, harsh acclimatization and tropical diseases. Until the early nineteenth century, annual

³⁹Dr. Amy Buono of Southern Methodist University is currently preparing a critical edition of this work in English translation at the Max Planck Institute for the History of Science, Berlin.

mortality rates of 25% to 50% were common for newly disembarked European soldiers and African slaves in Portuguese colonial enclaves.⁴⁰ The Conselho Ultramarino (Myrup 2006, 61–73), desperate to find effective remedies that could reduce casualties, commissioned medical authorities in Brazil, India and Africa to write descriptions of all the medicinal native plants and roots in their respective areas.⁴¹ Until Brazilian independence in 1822, crown authorities in Lisbon maintained their interest in discovering new South American indigenous remedies that could be of therapeutic—and commercial—use in imperial endeavors.

Francisco Arsenio de Sampaio, *História dos Reinos Vegetal, Animal e Mineral* (manuscript compiled at Cachoeira, Bahia, Brazil, 1782 [volume I] and 1789 [volume II])

*History of the Vegetable, Animal and Mineral Kingdoms, pertaining to Medicine*⁴² was a particularly ambitious project of pharmacological botany undertaken by Francisco Arsenio de Sampaio, a Portuguese-born physician resident in Bahia, Brazil in the late eighteenth-century. Sampaio compiled the multi-volume work between 1782 and 1789 at Cachoeira, the main agricultural market town on the Paraguaçu River in the fertile Bahian hinterland around the Bay of All Saints. Sampaio was an Enlightenment-era médico who clearly wanted to expose his countrymen to a deeper knowledge and understanding of the traditional indigenous medicinal plants with which he regularly worked. Indeed, the project, due to of its structure and scope, shows telltale signs of having been produced by commission, possibly at the behest of colonial authorities in Bahia or Lisbon. Two extant manuscript tomes each contain highly detailed descriptions of a variety of native South American plants, a summary of their healing virtues, proper doses to administer to patients, and methods for applying each remedy to the sick.

⁴⁰For transatlantic slave trade mortality rates, see Eltis (1999, 68, 159, 185–186). For figures of the annual number of patients treated at the *Hospital Militar* in Goa at the end of the eighteenth century, see HAG MR 173, f. 168 (3476 patients in 1791); HAG MR 176B, f. 436 (3858 patients in 1793); HAG MR 176B, f. 448 (3076 patients in 1794); and HAG MR 177A, f. 218 (1932 patients in 1797).

⁴¹For India, see Ignácio Caetano Afonso, *Discipçoens e Virtudes das Raizes Medicinaes* (“Descriptions and Virtues of Medicinal Roots”), manuscript booklet (1794), HAG MR 175, ff. 219–230; see also references to a similar royal directive, dated 2 April 1798, in HAG Monções do Reino 178B (1798–1799), ff. 644–645. Also for India, see BACL, Mss. 21 (Série Azul): *Medicina Oriental: Socorro Indico, Aos Clamores dos Pobres Enfermos do Oriente; Para total profligação de seus males adquiridaa da varios Profassores de Medicina* (anonymous; no date [eighteenth century?]) 1–632. For Brazil, see Bento Bandeira de Mello, manuscript (1788); ANTT, Ministério do Reino, cx. 555, mç. 444. For Angola, see Pinto de Azeredo (1799).

⁴²Manuscript held at the Biblioteca Nacional do Rio de Janeiro, Brazil.

Although the painstaking work was obviously intended for publication to a broad readership in the transatlantic medical and scientific community, for unknown reasons the project never went beyond the manuscript stage. Sampaio's work may have been considered too provincial, or he may have been unable to win the support of an influential patron in the metropole.⁴³ Fair copies of the first two volumes, handwritten and bound together with stunning original painted illustrations of Brazil's flora and fauna, are deposited in the Biblioteca Nacional in Rio de Janeiro. The plants described in Sampaio's first volume are organized into twelve sections according to their contemporary medicinal applications. Groups of plants evincing astringent, anti-venom, anti-colic, anti-spasmodic, purgative and anti-venereal healing qualities are each treated in their own discrete chapters.

Francisco Arsenio de Sampaio had been born at Vila Real in northern Portugal, but immigrated to Brazil as a young man. Where he completed his medical studies is not clear (most likely in Portugal, possibly as an apprentice at the Todos-os-Santos Hospital in Lisbon), but he was an approved surgeon with a license to practice medicine granted by the Bahian colonial senate (Arsenio de Sampaio, vol. 1, f. 1). He held the post of surgeon at the Hospital of São João de Deus in Cachoeira for nearly two decades. Volume I of his work, completed in 1782, described medicinal plants in 219 manuscript pages, supported by another twenty pages of color miniature paintings that skillfully rendered many of the plants described in the text. Sampaio included an alphabetical index of each plant name (noting their indigenous Tupí and Guaraní names, as well), and commented on non-native medicinal plants, like coffee, pepper and cinnamon, that the Portuguese had introduced from their overseas territories (Arsenio de Sampaio, vol. 1, 1, 117–124). Had the work been published, it would have contributed greatly to knowledge of regional Brazilian healing plants in the Lusophone world. Circulation of Sampaio's manuscript was probably minimal; therefore its ultimate impact as a conduit of information, though uncertain, was likely very meager.⁴⁴

Bento Bandeira de Mello, untitled memorandum about medicinal plants of Brazil (1788)

Elsewhere in Portuguese America, at about the same time, a similar state-directed effort to gather medicinal knowledge was underway—this one explicitly

⁴³The Portuguese crown permitted no printing press in Brazil until 1808, when the royal court and family took up residence in Rio de Janeiro; until then, all printing projects had to be sent to Lisbon for approval and typesetting, Skidmore (1999, 32–40).

⁴⁴Both volumes of Francisco Arsenio de Sampaio's *História dos Reinos Vegetal, Animal e Mineral, Pertencente à Medicina* were eventually published together as a special issue of the journal *Anais da Biblioteca Nacional*, vol. 89 (Rio de Janeiro, 1969). I am grateful to Fabiano Bracht of the University of Porto, Portugal, for alerting me to this reference.

state-directed. In 1788, Brazilian physician and natural scientist Bento Bandeira de Mello submitted a lengthy memorandum on frequently used indigenous medicines in his region, the coastal northeast of Brazil.⁴⁵ De Mello was responding to a direct royal order from Queen Maria, transmitted through the Overseas Council; he had been charged with creating an alphabetical list of medicinal plants, fruits and roots from the territories of Pernambuco and Paraíba, with commentary concerning their curative effects. His annotated roster, containing fifty-nine different South American medicinal plants, runs to twenty-four manuscript folios.

Examples of native healing plants de Mello discussed in his compilation include various types of ipecacuanha (also called cipó), a reliable emetic and diaphoretic; cinchona bark (also called quina or quineira), arguably the most important remedy found in the New World, a febrifuge essential to treating malaria and other tropical fevers (Jarcho 1993, 102–104, 297–298; Maehle 1999, 223–233); jalapa, an effective purgative; copaiba, to treat gonorrhea; and salsaparilha, administered against syphilis and skin diseases.⁴⁶ More than any others, these particular Brazilian remedies traveled within the Atlantic medicinal economy, gaining widespread medical usage elsewhere in the Portuguese empire, and becoming both medically and commercially significant commodities.

Per royal instructions, de Mello sent specimens of many of these plants to the Ajuda Palace royal botanical garden in Lisbon, where they were assessed for their medical usefulness, and suitability for transplant to other imperial regions.⁴⁷ Hence, the impact of his work carried farther than the palace chambers of the Conselho Ultramarino. The desired end of this official initiative, of course, was to further Portuguese aims by reducing chronic, unacceptably high wastage of human resources through injury and illness. As the following documents illustrate, this policy to consolidate strategically useful medical knowledge extended to contemporary Portuguese colonies in India, as well.

Ignácio Caetano Afonso, *Discripçoens e Virtudes das Raizes Medicinaes* (1794)

During the closing decades of the eighteenth century, as a result of limited human resources, imperial exigencies and generations of cultural blending, even the chief physician of the Estado da Índia was a native Goan: Ignácio Caetano Afonso, born

⁴⁵Manuscript held at the Arquivo Nacional de Torre do Tombo, Ministério do Reino. cx. 555. mç. 444; Lisbon, Portugal.

⁴⁶Vicente Jorge Dias Cabral (1801), “Ensaio Botânico de algumas plantas de parte interior do Piauí [...],” AHU (AHU-ACL-CU-016, cx. 25, D. 1311) (1801); Sousa Pinto (1837, 21, 31); Mendes Ferrão (2005, 157–160).

⁴⁷ANTT, Ministério do Reino, cx. 555, mç. 444., f. 2.

into an elite Portuguese-speaking Indo-European family. Though he had access to little formal medical training in the European sense, he gained a very favorable reputation as a healer. In March 1798, in a letter to the Portuguese Secretary of State in Lisbon, the Governor of the Estado da Índia, Dom Rodrigo de Souza Coutinho, described Afonso as “a Brahmin [...] favored with natural talents” for healing. The Governor continued, saying that “notable cures” had been attributed to him, even though he “had not opened any [medical] book for many years.”⁴⁸ The following year, after Afonso’s death, Governor Souza Coutinho would write that Afonso had “the sense of a Médico, and practiced for many years, which compensated for the defects of his [medical] education.”⁴⁹

While Afonso appears to have studied informally in Goa at the Hospital Militar under his predecessor, the Portuguese-born, Coimbra University-trained physician Luís da Costa Portugal (who had made a practice of taking in promising Goan healers and training them in Western medical techniques),⁵⁰ Afonso’s medical knowledge consisted primarily of native Indian plants and their medicinal applications. In the main, Afonso treated Portuguese soldiers, officials and colonists with local remedies derived from indigenous Indian drugs—medicines that Afonso learned from older Goan healers, who had employed them since time immemorial. Ignácio Caetano Afonso was a product of this rich blended healing culture.

In 1794, the Conselho Ultramarino called upon Ignácio Caetano Afonso to report on efficacious medicinal plants available in Goa. In response, the Indo-Portuguese chief physician sent colonial authorities in Lisbon a twelve-page manuscript summary,⁵¹ which he titled “Descriptions and Virtues of Medicinal Roots.”⁵² The document named five of the most widely used medicinal roots or plants in Goa, described their appearance, methods of gathering them, and their proper preparation and application. One example of the several medicinal roots to which Afonso referred was the celebrated pau cobra, or “cobra wood,” a name applied to several varieties of plant root known across south India and thought to be effective against snakebite or other venomous animal stings. According to Afonso’s manuscript report, pau cobra was known in Ceylon, the plant’s native home, as “Hampaddu Tanah”—Afonso rendered the name phonetically in his Portuguese-language text (Dalgado 1988, vol. 2, 196–197). In Goa, Afonso

⁴⁸HAG MR 177A, f. 212. Letter dated 14 March 1798.

⁴⁹HAG MR 178A, f. 272. Letter dated 28 April 1799.

⁵⁰HAG MR 177A, f. 212.

⁵¹Manuscript booklet held at the Historical Archive of Goa, India.

⁵²Ignácio Caetano Afonso, *Discripçoens e Virtudes das Raizes Medicinaes*, manuscript booklet (1794), HAG MR 175, ff. 219–230, see also references to a similar royal directive, dated 2 April 1798, in HAG Monções do Reino 178B (1798–1799), ff. 644–645.

wrote that the plant was well known among indigenous “herbalists,” but that it was generally referred to by its Portuguese name.⁵³

Ongoing concerns about the health of soldiers and colonial officials in the tropics prompted imperial authorities in Lisbon to continue their efforts to discover new indigenous remedies from India or elsewhere that could be of use in supporting crown endeavors. In a royal directive dated 2 April 1798, the new *Cirurgião-Môr* (chief surgeon) and other *medicos* of the Hospital Militar de Goa were once again given an opportunity to display their knowledge of indigenous medicine from Portuguese India. Queen Maria I, and the *Conselho Ultramarino*, seeking medicines to treat tropical diseases throughout the Portuguese maritime colonial network, commissioned the Goa Hospital Militar staff physicians and surgeons to write a description of all the useful medicinal plants found along the Malabar Coast and in the remaining Portuguese enclaves in India.

The following year, *Cirurgião-Môr* Dr. José Abriz and his colleagues produced a report, extending to nearly forty manuscript pages, in which they provided thorough descriptions of eleven important roots and plants then in use in the medical facilities of Goa, Damão and Diu, as well as the east African colonial holdings.⁵⁴ Following the order in which they appear in the text, these plants are: *Raiz de Cobra* (“snake root”), for venomous serpent, insect and animal bites; *Calumba*; *Butua* (also known as *Pereira Brava*), used to treat wounds and bites; *João Lopes Pinheiro*, a febrifuge and carminative; *Pedra Quadrada*, a mineral used as an astringent and to ward off illness; *Casca de Raiz de Intaca*, a root administered for colds and fevers that come from fatigue, or “venereal excesses”; *Bangue*, a calming preparation made from *cannabis sativa*; *Cuia Cuia*, for dysentery; *Batatinha*, a febrifuge; *Contos do Espinhos*, worn to ward off seasonal monsoon fevers; and *Inhofancos*, a diuretic, febrifuge, and antispasmodic.⁵⁵

The medical professionals in Goa included their report with the official correspondence of the *Estado da Índia* (the *Livros dos Monções do Reino*), sent to Lisbon aboard the annual government-sponsored vessel; their cover letter is dated 29 April 1799.⁵⁶ In this way, reports about tropical medical substances thought to be efficacious were circulated through official colonial administrative correspondence and made available to crown authorities at the highest levels in the home country.

⁵³HAG MR 175, ff. 220r–221v.

⁵⁴HAG *Monções do Reino* 178B (1798–1799), ff. 644–664.

⁵⁵See previous footnote.

⁵⁶HAG *Monções do Reino* 178B (1798–1799), f. 644.

Anonymous, *Medicina Oriental: Socorro Indico, Aos Clamores dos Pobres Enfermos do Oriente; Para total profligação de seus males adquiridaa da varios Professores de Medicina*

Yet another extraordinary botanical cataloguing project undertaken specifically to facilitate the transfer of medical knowledge within the Portuguese colonial system is a work entitled *Oriental Medicine: Indic Assistance, for the Clamors of those Poor Infirm Patients of the Orient; For total alleviation of its ills, Acquired from various Professors of Medicine*.⁵⁷ This work is an anonymous, undated manuscript of 1312 pages, apparently compiled in India during the second half of the eighteenth century; on the title page, the author reveals only that he is a native-born Goan. Like Garcia da Orta's work of 1563, it was intended manifestly as both a didactic and commercial medicinal guide—though this second purpose remains unstated.⁵⁸

In a highly telling circumstance, once conveyed to Europe, the manuscript was deposited in the library of the Lisbon Royal Academy of Sciences, which was founded by Queen Maria I in 1779 as an Enlightenment-era institution to facilitate the establishment of empirical learning in Portugal. The work's first 632 pages describe a total of 781 different medicinal substances (derived from “plants, fish, birds, animals, minerals and precious stones”) from India and other colonized regions of Asia. The unknown author provided information in minute detail about these plants' healing qualities, applications, and names in Indian and European languages (*Medicina Oriental*, 1: frontispiece).

Though the precise provenance of this work is unclear, its dedication (to “The Most Holy Trinity of the One True God”), exceptional intellectual rigor and detail suggest that it was composed by a professional medical practitioner of long experience in the Portuguese colonial hospitals or infirmaries of Asia. It is possible, even likely, that the author was a Jesuit priest, but the tome may have been composed by a learned Indo-Portuguese physician employed in one of the missionary medical facilities in Goa. Nor is it certain that the work was commissioned directly by royal or imperial authorities—though that it was incorporated early on into the Royal Academy of Sciences library provides a hint of its perceived importance at the time, and possibly its patronage.

The volume has not been meticulously assessed by modern historians of medicine, but it promises to provide future researchers with a rich trove of insights into contemporary Portuguese understanding of South Asian *materia med-*

⁵⁷ Manuscript held in the Biblioteca da Academia das Ciências de Lisboa.

⁵⁸ Anonymous, *Medicina Oriental: Socorro Indico, Aos Clamores dos Pobres Enfermos do Oriente; Para total profligação de seus males adquiridaa da varios Professores de Medicina*; Biblioteca da Academia das Ciências de Lisboa (BACL), Mss. 21 (Série Azul); no date [second half of the eighteenth century?], 1–632.

ica. Like the prodigious contemporary work concerning remedies from Brazil by Francisco Arsenio de Sampaio, this project seems to have been intended for publication as a comprehensive compilation of all known medical lore for the region it covers (coastal southern and western India).

Friar Leandro de Madre de Deus, *Notícias Particular do Comércio da Índia* (dated 13 July 1772 at the Court of Pune)

Portuguese missionaries, physicians and diplomats in India also played a role in distributing European and Malabar Coast remedies to the Muslim Mughal court in the northern interior of India. Whenever the Portuguese sent an envoy to negotiate with the reigning Raja in Agra, for example, custom dictated that gifts be exchanged. Among the perfumed herbs, rich fabrics, silver inlaid blades and potent distilled beverages (notably aguardente and cashew feni) sent as tribute, the Portuguese commonly sent typical Hindu-influenced medicines, such as balsamo apopletrico, for headaches, and sandalwood paste for fevers. One typical example of this practice can be found in a record of the Portuguese embassy to the court of Raja “Sauac Bacinga” (rendered phonetically in Portuguese) in December 1737; the itemized presents filled dozens of medicinal jars, bottles and ornate chests.⁵⁹ Occasionally Mughal authorities would request the services of a European physician from Goa to treat a malady that proved unresponsive to the methods of court healers Manucci 1907, vol. 2, 157–167). Such treatments commonly consisted of a mixture of European and indigenous medicines drawn from across the empire.

The courts of the Indian rulers were also good vantage points from which to observe the general movement of commercial goods within the maritime world of the Far East. Up-to-date information about that system of trade was of course a commodity to be valued of itself, and the Portuguese governors in Goa were eager to gather, disseminate and exploit intelligence on this matter for the benefit of their own commercial interests, as well as those of the merchants of the Estado da Índia. In about 1770, a Capuchin priest named Friar Leandro de Madre de Deus was attached to the court at Pune as a missionary and healer, but he was also a confidant and correspondent of the Governor General of Portuguese India, Dom João José de Melo. Friar Leandro’s official instructions charged him with helping a Portuguese physician who had been dispatched from Goa to attempt to heal the ailing potentate at Pune, Madó Rao, but the Capuchin priest was also gathering information about the hostilities developing at that time between the Portuguese and the rulers of Maharashtra.⁶⁰ Two years later, Friar Leandro produced a comprehensive description of the trade routes, commodities exchanged

⁵⁹HAG 1429, *Regimentos e Instruções* (1727–1737), f. 229.

⁶⁰HAG 1436, *Regimentos e Instruções* (1771–1774), f. 11r/v.

and prices obtained for goods throughout the principal ports of the Far East, from the Indian Ocean to Macau, and sent it to the ruling council of the Estado da Índia in Goa.⁶¹ Friar Leandro's Particular Notices of the Commerce of India is a comprehensive overview of this complex, geographically broad trade network, one of the first guides of its kind, showing how goods purchased in one location could be sold for a profit in another as merchant ships discharged and loaded goods when sailing from port to port.⁶²

Leandro included numerous medicinal plants, drugs and spices used in curative preparations in his description of trade goods sent out from India, of course; the merchants of the Portuguese colonies sold these Malabar Coast remedies in various ports in China, Annam (Viet Nam) and the East Indies. Most are classical Indian medicinal substances that had long-accepted uses in traditional Ayurvedic healing, as well as in the local cultures along the southwest coast of India.⁶³ *Notícias Particular do Comércio da Índia* describes Indian sandalwood, stag horn and clove oil from Ceylon bringing high profits in Macau when sold as remedies.⁶⁴ The gum resin myrrh, purchased in Calicut or Cochin, could be sold for substantial gains as a medicinal ingredient in Malacca or Macau.⁶⁵ The balsam or salve made from benzoin, purchased in eastern India, had a profitable market "in every part of the world," according to Leandro's report.⁶⁶ Tamarind and pepper, also sold throughout Asia as medicinal substances, left India in the holds of Portuguese merchant vessels. All of these medicinal commodities, of course, have their place in the classical Ayurvedic tradition; Friar Leandro's text implicitly acknowledges that these medicines were to be applied essentially as longstanding Ayurvedic practice recommended.

Notícias Particular, then, provides a contemporary late eighteenth-century description of Portuguese commercial distribution methods of Indian healing substances, but it is itself also a conduit of practical, professional medical information about those drugs. This report was probably copied and disseminated, like others similar to it, among merchants and officials of the Estado da Índia, and most likely used to inform the Conselho Ultramarino in Lisbon, as well.⁶⁷

⁶¹ Held at the Central Library of Panaji, Goa.

⁶² Central Library of Panaji, Goa; Manuscripts No. 18: *Notícias Particular do Comércio da Índia* (dated 13 July 1772 at the Court of Pune, by Friar Leandro), ff. 2–58.

⁶³ *Ibid.*, ff. 27–36.

⁶⁴ *Ibid.*, f. 28.

⁶⁵ *Ibid.*, f. 27.

⁶⁶ *Ibid.*, f. 32.

⁶⁷ A similar document describing commercial transfers of medical substances, dated 1779, is held in the Arquivo Histórico Ultramarino in Lisbon, and has been published in Afzal (1997, 51–118).

Conclusion

European epistemologies of medicine evolved during the early modern period in no small part as a result of the Portuguese colonial experience. The presence of diverse Portuguese agents in disparate colonial spaces across several continents occasioned the transfer and diffusion of medical knowledge to Europe and throughout their entire imperial network, where no direct lines of contact had existed prior to the establishment of maritime commercial and administrative links. Indigenous peoples of the Portuguese colonies thus made important contributions to “Western medicine” during the early modern period, but did so through European intermediaries, who often altered the original application of native medicines (or the philosophy behind indigenous healing techniques) to meet their own ends. This transfer of healing information, because it was accomplished mainly by Europeans using tools of transmission peculiar to them (written reports, guides, and letters), depended ultimately on European interpretations, ideas, and concepts about medicine. Thus, medical descriptions of newfound drugs and their effects were usually couched in contemporary Galenic or humoral terms. But a commercial focus on portable, saleable medical commodities helped to inspire a changing approach to illness, with a gradually increasing focus on the idea of medical “specifics”—single remedies intended to address discrete maladies.

Portuguese colonial agents (missionaries, merchants, military officers, medical practitioners, colonial administrators) displayed widely varying motives for gathering and disseminating indigenous knowledge about healing. Thus, their different approaches to, and methods of, knowledge transmission affected the ultimate impact of the bodies of knowledge that they diffused. Commercial agents saw native medicines mainly as a profitable commodity, to be marketed and sold in distant regions where the exoticism of a product might increase demand, and consequently price. Missionaries viewed mastery of local medicine as tool of evangelizing and conversions, though they, too, came to rely on the revenue that sales of medicines could generate. Colonial medical officials seem to have been motivated by a genuine professional ethic—the desire to spread efficacious healing techniques for the edification of their colleagues in the metropole. Crown authorities, meanwhile, were moved by strategic imperial exigencies to view the command of medical resources as a means to protect meager, fragile human resources. Taken together, these protracted efforts represent an unparalleled framework for medical knowledge acquisition and dissemination: during the early modern period, Portuguese colonial agents brought indigenous drugs and information about native healing methods back to Europe, and spread such commodities and techniques to colonial Lusophone territories around the globe.

Acknowledgements

The research necessary for this work was supported by the Portuguese Fundação Luso-Americana para o Desenvolvimento and the Fundação Oriente, the American Institute for Indian Studies, the National Endowment for the Humanities, the University of California Davis Department of Nutrition, a Joseph P. Healey Endowment Grant from the University of Massachusetts Dartmouth, and the UMASS Dartmouth Center for Portuguese Studies and Culture. In addition, for logistical support in Brazil and Italy, thanks are due to the Biblioteca Nacional do Rio de Janeiro, the Biblioteca da Escola de Farmácia da Universidade Federal de Ouro Preto the Arquivo Público de Salvador da Bahia, and the Archivum Romanum Societatis Iesu.

Abbreviations

AHU	Arquivo Histórico Ultramarino (Portuguese Overseas Historical Archive); Lisbon, Portugal
AHSTP	Arquivo Histórico do São Tomé e Príncipe (National Archives of São Tomé e Príncipe)
ANTT	Arquivo Nacional da Torre do Tombo (National Archives of Portugal)
ARSI	Archivum Romanum Societatis Iesu (Society of Jesus Archive, Rome)
BACL	Biblioteca da Academia das Ciências de Lisboa (Academy of Sciences, Lisbon)
BMJB	Biblioteca do Museu do Jardim Botânico (Library of the Museum of the Botanical Garden); Lisbon, Portugal
BNF	Bibliothèque Nationale de France; Paris
BNRJ	Biblioteca Nacional do Rio de Janeiro (National Library; Brazil)
CLPG	Central Library of Panaji, Goa, India
HAG	Historical Archive of Goa, India
MR	Livros dos Monções do Reino (annual volumes of official state correspondence from and to the Estado da Índia)
cx	caixa (box)
ff	folhos (folios)
mç	maço (bundle)

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