

The Medicines Trade in the Portuguese Atlantic World: Acquisition and Dissemination of Healing Knowledge from Brazil (c. 1580–1800)

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Summary. Portuguese colonial exploration and settlement in Brazil during the sixteenth, seventeenth and eighteenth centuries included a significant, though to date largely underappreciated, dimension of medical inquiry, the impact of which resonated throughout the Atlantic scientific world and beyond. This paper examines the role and influence within Portugal's maritime dominions of medical techniques, remedies and specific drugs originating in colonial Brazil. It focuses attention on the earliest collaborative interaction between indigenous healers and Portuguese missionaries—mainly Jesuits—on the Brazilian colonial frontier, who then passed that knowledge on to European physicians, surgeons and pharmacists working in colonial South American medical facilities. In such institutions, indigenous techniques were most often employed to the edification of Portuguese colonial agents (missionaries, colonial administrative officials, maritime commanders and state-licensed medical practitioners), who would then become the conduits disseminating those techniques to Europe or other colonial locations.

Keywords: Early Modern; drugs; medicine; trade; commerce; exchange; circulation; Atlantic World; colonial; indigenous; Brazil; Portugal; Portuguese Empire

Portuguese colonial exploration and settlement in Brazil during the sixteenth, seventeenth and eighteenth centuries included a significant, though to date largely underappreciated, dimension of medical inquiry, the impact of which resonated throughout the Atlantic scientific world and beyond. Early contacts with native peoples through commercial exploration and sustained missionary activity, combined with pragmatic attempts to address threats to the health of European settlers in the South American tropics, occasioned Portuguese-led medico-botanical prospecting in the *Recôncovo* (Salvador da Bahia hinterland), Amazon River basin, Guanabara Bay (Rio de Janeiro hinterland), Minas Gerais mining areas, and other regions of Brazil. Such pioneering experimentation added extensively to European knowledge and understanding of traditional South American healing practices and pharmacological botany.

The enduring impact of these early scientific inquiries has long outlasted the transient economic importance of the Lusophone maritime empire. Descriptive works about South American medicinal plants by Portuguese observers during the early modern period informed Europeans for the first time about many of the efficacious drugs commonly employed in Tupí, Guaraní and other indigenous Brazilian healing traditions. Seen through a medical history lens, the acquisition, interpretation and dissemination of native curing practices emerges as one of the salient features of Portuguese overseas expansion.¹

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¹For a comprehensive bibliography (to 1996) on the medical dimension of Portuguese maritime expansion

and colonisation, see José Pedro Sousa Dias, 'Bibliografia sobre a Farmácia e a Matéria Médica da Expansão e da Colonização Portuguesa (Séculos XVI a XVIII)', *Mare*

In Brazil, as in their African and Asian colonies, Portuguese medical practitioners encountered a radically different sphere of healing knowledge, shaped by the region's unique ecological and social context. The Portuguese would explore, exploit, expropriate and export this body of native medical experience for more than three centuries. In an unparalleled feat of scientific acquisition and dissemination, Portuguese colonial agents spread indigenous drugs and information about native South American healing methods to Europe, as well as to colonised territories in India, China, Africa and Indonesia.

This essay will examine the role and influence within Portugal's maritime dominions of medical techniques, remedies and specific drugs originating in Brazil. It will focus attention on the earliest collaborative interaction between indigenous healers and Portuguese colonists—mainly Jesuit missionaries—on the Brazilian frontier, who then passed that knowledge on for the edification of Portuguese colonial agents: administrative officials, merchants, maritime commanders, conventional medical practitioners and fellow missionaries.² Such personnel in turn became the conduits who disseminated South American native techniques and products to Europe or other colonial locations. As Brazil's colonial settlements developed, so did diverse medical facilities; in them, European surgeons, pharmacists and physicians often employed and adopted indigenous healing plants and methods.³

A second focus will be on the empire-wide trade of South American medicinal plants—again, often conducted by Jesuit missionaries—between 1580 and 1830. Finally, this essay will examine attempts to codify and systematically distribute written information about Brazilian medical substances in the later colonial period. Such works include the endeavours of private individuals (usually European-born, conventionally-trained surgeons or physicians), and official reports about South American medicines produced by colonial authorities in Brazil at the request of the Portuguese *Conselho Ultramarino* in Lisbon.⁴ Such reports were an important conduit of information to crown officials in the metropole and to medical officials in other parts of the Portuguese empire. These specialised reports provide a telling gauge of the state of contemporary European knowledge about medicinal substances from South America, and about which drugs or application techniques Europeans found beneficial and efficacious, and why. The main intent of this article, then, is to examine how Europeans learned indigenous Brazilian medical techniques through cross-cultural interactions, and to determine how Europeans put native medicine to work toward their own ends, both within the colonial context and in the metropole.

Historiographically, this project represents a confluence of several different scholarly streams—that of the history of early modern medicine, intermingled with studies of Jesuit missionary endeavours, and accounts describing the Portuguese establishment of their

Liberum, Revista de História dos Mares, 11–12 (1996), 165–207. Subsequent additions to this historiography may be found in Cristiana Bastos and Renilda Barreto (eds), *A circulação do conhecimento: medicina, redes e impérios* (Lisbon: Imprensa do Instituto de Ciências Sociais, 2011).

²Licurgo de Castro Santos Filho, *História da Medicina no Brasil, do Século XVI ao Século XIX*, 2 vols (São Paulo: Editora Brasiliense Ltda., 1947), I, 112; II, 12, 23–30; and Biblioteca Nacional do Rio de Janeiro (National Library, Brazil; hereafter BNRJ), Manuscripts Division,

I-15, 02, 026: *Curiosidad; un libro de Medicina escrito por los Jesuitas en las Misiones del Paraguay en el año 1580; circa 280 ff.*

³Santos Filho, *História da Medicina no Brasil*, I, 337–353; II, 12, 23–30.

⁴The *Conselho Ultramarino*, or royal 'Overseas Council', created in 1642, was responsible for colonial administration until the early nineteenth century. Erik Lars Myrup, 'To Rule from Afar: The Overseas Council and the Making of the Brazilian West, 1642–1807' (unpublished PhD thesis, Yale University, 2006), 61–73.

empire. Portuguese expansion as a field has moved away from a tendency to focus on individual colonies or imperial zones, with several recent comparative studies contributing to our better understanding of how the Portuguese maritime empire functioned as a comprehensive, interdependent system.⁵ Regarding the role of Jesuit priests in furthering early modern medicine and science, it is largely this fundamental agency of missionaries that sets the Portuguese and Spanish colonial experience apart from that of the Dutch, British and French contexts. Scholarly understanding of Jesuit contributions has been enriched by recent work, built in turn on pioneering studies done since the 1950s.⁶ But it is scholarship that delves into colonial medicine specifically that has seen some of the greatest recent activity, with groundbreaking work in English- and Portuguese-language publications.⁷ However, most works in English have focused on the movement of medicinal knowledge from the British, Dutch and, to a lesser extent, the French and Spanish colonial regions—whether in the Atlantic World or across Asia—to northern Europe. 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 omitted from most of these accounts.⁸

As a research venture, then, this article is innovative and singular. No prior work in English has made such extensive use of diverse primary sources to derive an understanding of indigenous influences on colonial medical culture in Brazil.⁹ While abundant scholarly attention

⁵Francisco Bethencourt and Kirti Chaudhuri (eds), *História da Expansão Portuguesa*, 5 vols (Lisbon: Círculo de Leitores, 1998); Francisco Bethencourt and Diogo Ramado Curto (eds), *Portuguese Oceanic Expansion, 1400–1800* (Cambridge University Press, 2007); Liam Matthew Brockey (ed.), *Portuguese Colonial Cities in the Early Modern World* (Aldershot: Ashgate, 2008); Anthony R. Disney, *A History of Portugal and the Portuguese Empire*, 2 vols (Cambridge: Cambridge University Press, 2009).

⁶Serafim Leite, S. J., *Artes e Ofícios dos Jesuítas no Brasil (1549–1760)* (Lisbon: Edições Brotéria, 1953); John W. O'Malley, S. J., *The First Jesuits* (Cambridge, MA: Harvard University Press, 1993); Dauril Alden, *The Making of an Enterprise: The Society of Jesus in Portugal, Its Empire, and Beyond, 1540–1750* (Palo Alto, CA: Stanford University Press, 1996); Steven J. Harris, 'Mapping Jesuit Science: The Role of Travel in the Geography of Knowledge', in John W. O'Malley, S. J., Gauvin Alexander Bailey, Steven J. Harris and T. Frank Kennedy (eds), *The Jesuits: Cultures, Sciences, and the Arts, 1540–1773*, 2 vols (Toronto: University of Toronto Press, 1999 and 2006); Inés G. Zupanov, *Missionary Tropics: The Catholic Frontier in India (16th–17th centuries)* (Ann Arbor, MI: University of Michigan Press, 2005).

⁷Lusophone works in this area are extremely rich. In Portugal, they include publications mentioned above by José Pedro Sousa Dias and Cristiana Bastos (note 1); also by Sousa Dias: *A Farmácia em Portugal: Uma introdução à sua História, 1338–1938* (Lisbon: Associação Nacional das Farmácias/INAPA, 1994); and *Droguistas, boticários e segredistas. Ciência e Sociedade na*

Produção de Medicamentos na Lisboa de Setecentos (Lisbon: Fundação Calouste Gulbenkian/Fundação para a Ciência e a Tecnologia, 2007). From Brazil, fundamental work by Licurgo de Castro Santos Filho (see note 2) has been revised and expanded through such recent publications as Márcia Moisés Ribeiro, *A ciência dos trópicos: a arte médica no Brasil do século XVIII* (São Paulo: Editora Hucitec, 1997); Pedro Salles, *História da Medicina no Brasil* (Belo Horizonte: Coopmed, 2004); and Flávio Coelho Edler, *Boticas & Farmácias: Uma História Ilustrada da Farmácia no Brasil* (Rio de Janeiro: Casa da Palavra, 2006).

⁸In English, key recent works include: Andreas-Holger Maehle, *Drugs on Trial: Experimental Pharmacology and Therapeutic Innovation in the Eighteenth Century* (Amsterdam: Rodopi, 1999); Londa Scheibinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, MA: Harvard University Press, 2004); Karol Kovalovich Weaver, *Medical Revolutionaries: The Enslaved Healers of Eighteenth-Century Saint Domingue* (Champaign, IL: University of Illinois Press, 2006); Harold J. Cook, *Matters of Exchange: Commerce, Medicine and Science in the Dutch Golden Age* (New Haven, CT: Yale University Press, 2007); James Delbourgo and Nicholas Dew (eds), *Science and Empire in the Atlantic World* (New York: Routledge, 2008); and Daniela Bleichmar, et al. (eds), *Science, Power and the Order of Nature in the Spanish and Portuguese Empires* (Palo Alto, CA: Stanford University Press, 2009).

⁹Research for this publication was completed in ten archives or libraries in six countries on four continents.

has been directed toward indigenous medicine in other European colonial enclaves in Asia and the Atlantic world, little of the pertinent literature on Brazil or the Portuguese Empire is available in English.¹⁰ Historians of medicine have not examined in detail the effect of protracted Portuguese exposure—longer than that of any other European maritime nation—to indigenous healing ideas, or why the Portuguese tended to be exceptionally receptive to the adoption and dissemination of native medical practices in their African, Asian, and South American colonies. Thus, this project aims to add significantly to a scholarly understanding of how healing lore was transferred from one culture to another in the Brazilian colonial context. This work contributes to the fields of medical and colonial history by addressing gaps in the current literature, and provides useful comparative material regarding the interactive healing experiences of Europeans and indigenous peoples in Brazil.¹¹

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In the early stages of Portuguese maritime expansion, the cardinal aim of which was to establish commercial ties with thriving trading ports in the vast, ill-defined 'Orient', the procurement of medicinal substances, and information about them, was focused mainly on drugs of Asian (Indian and Chinese) origin. Systematic Portuguese empire building during the first half of the sixteenth century centred almost exclusively on Asia;¹² activities in Brazil did not begin in earnest until after 1550. The Society of Jesus sent its vanguard of missionary *friars* to Brazil in 1549; the first Jesuit infirmaries were founded in 1550 and endured there until the expulsion of the Order from all Portuguese lands in 1759–60.¹³ With their rigorous scholastic and medical training, focus on healing as a tool of evangelism,¹⁴ and a growing medicinal distribution network through their mission pharmacies across four continents, the Jesuits were at the forefront of efforts to preserve health in Brazil, procuring, describing, and classifying healing plants much as they had been doing with the simples they encountered in Asia, through their interactions with native peoples in the mission fields.¹⁵ A Jesuit missionary's education prior to departure prepared him for two specialised types of healing work, either as a nurse (who might also perform minor surgeries) or as a pharmacist.¹⁶ In 1576, Pope Gregory XIII issued a dispensation allowing appropriately trained Jesuits to perform duties as physicians in areas that otherwise lacked access to (implicitly European) medical care.¹⁷ Toward the later sixteenth century, as colonisation steadily expanded and medicinal plants of the Recôncovo, Amazon rainforest and coastal regions became better known, Jesuit missionaries took a keen interest in collecting data about native uses for these substances, even devising prescriptions of their own using Brazilian flora, and beginning to export remedies throughout Portuguese sovereign territories.¹⁸

¹⁰Sousa Dias, 'Bibliografia sobre a Farmácia'; Bastos and Barreto, *A circulação do conhecimento*.

¹¹See notes 8 and 9.

¹²Disney, *A History of Portugal*, II, 119–64.

¹³Santos Filho, *História da Medicina no Brasil*, I, 337.

¹⁴All 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. Charles E. O'Neill and Joaquín M. Domínguez (eds), *Diccionario Histórico de la Compañía de Jesús Biográfico-Temático*, 4 vols (Rome: Institutum Historicum, 2001), III, 2601–2.

¹⁵For discussion see Zupanov, *Missionary Tropics*, chs 3, 4 and 6; and Harris, 'Mapping Jesuit Science', 214–33. An example of Jesuit medical prospecting in manuscript is BNRJ, Brazil; Manuscripts Division; Nr. I-15, 02, 026, ff. 1–280.

¹⁶Leite, *Artes e Ofícios dos Jesuítas no Brasil*, 83–9.

¹⁷O'Neill and Domínguez, *Diccionario Histórico*, III, 2601–2.

¹⁸Serafim Leite, S. J., *Suma Histórica da Companhia de Jesus no Brasil* (Lisbon: Junta de Investigações do Ultramar, 1965), 166; Santos Filho, *História da Medicina*, II, 26–30.

In the course of the seventeenth and eighteenth centuries, several secular Portuguese medical practitioners attempted to codify descriptions of useful healing substances found in 'the Brazils', classifying them according to their respective provenances and applications.¹⁹ By the mid-eighteenth century, a broad range of South American medical substances had entered common pharmaceutical usage in continental Portugal.²⁰

Indigenous medicinal plants that Portuguese settlers adopted and exported from Brazil in significant quantities beginning in the sixteenth century included derivatives of *cacau* (medicinal chocolate and cocoa butter, the latter used to treat skin ailments); *ipecacuanha* (also called *cipó*), a reliable emetic and diaphoretic; cinchona bark (also called *quina* or *quinaeira*), arguably the most important remedy found in the New World, essential to treating malaria and other tropical fevers;²¹ *jalapa*, an effective purgative; *copaíba*, to treat gonorrhoea; and *salsaparilha*, administered against syphilis and skin diseases.²² More than any others, these Brazilian remedies circulated in the Atlantic World medicines trade, becoming commercially and medically significant, and achieving widespread usage elsewhere in the Portuguese empire.

Other plant-derived drugs originating with indigenous practices in Brazil but found inculcated into the Portuguese medical lexicon elsewhere in the Lusophone world included *abutua* root (drunk in a decoction to treat fever, or as a purgative and stimulant), *tacamahaca* gum (a bitter resin used as a topical balm), *guaiaco* gum (used to treat wounds or sores, or mixed in a beverage drunk to ease sore throat pain), *mechoacão* (a white *jalapa* root), and *almécega* gum (a tree resin chewed to relieve pain).²³ Brazilian healers employed *maracujá* (passion fruit) juice to treat fevers, pineapple juice (*ananás*) to dissolve kidney stones, cashew fruit juice (*cajú*) for fever and stomach ailments, and Inga fruit (*Ingá*) for addressing liver problems.²⁴ All of these substances were standard, commonly stocked medicines in Brazilian apothecary shops in the seventeenth and eighteenth centuries, and also could be found in continental Portuguese pharmacies.

Indigenous peoples of Brazil thus made important contributions to 'Western' medicine during the early modern period, but typically did so anonymously and indirectly through European intermediaries, who often failed to discuss the original human sources for this knowledge. Though they gathered ethno-botanical information systematically, European

¹⁹For example, Aleixo de Abreu, *Tratado de las siete enfermedades, de la inflamacion vniuersal del higado ... de la terciana y febre maligna, y passion hipocondriaca ... del mal de loanda, del guzano y de las fuentes y sedales...* (Lisbon: Pedro Craesbeeck, 1623); see also Luís Gomes Ferreira, *Erário Mineral* (Lisbon: Oficina de Miguel Rodrigues, 1735) (modern edition coordinated by Júnia Ferreira Furtado; Rio de Janeiro: Editora FIOCRUZ, Collecção Mineiriana, 2002); and Francisco Arsenio de Sampaio, *História dos Reinos Vegital, Animal e Mineral* (manuscript compiled at Cachoeira, Bahia, Brazil, 1782 [volume I] and 1789 [volume II]), BNRJ, Mss I-12,01,019.

²⁰José Pedro Sousa Dias and Rui Pita, 'A Botica de S. Vicente e a Farmácia nos Mosteiros e Conventos da Lisboa Setecentista', in *A Botica de São Vicente de*

Fora (Lisbon: Associação Nacional das Farmácias, 1994), 12–20.

²¹Saul Jarcho, *Quinine's Predecessor: Francesco Torti and the Early History of Cinchona* (Baltimore, MD: Johns Hopkins University Press, 1993), 102–4; 297–8; and Maehle, *Drugs on Trial*, 223–33.

²²For detailed descriptions and documentation of the various uses of these medicinal plants, please see the appendix.

²³José Pedro Sousa Dias, 'Inovação Técnica e Sociedade na Farmácia da Lisboa Setecentista' (Doctoral dissertation of the Universidade de Lisboa, Faculdade de Farmácia, 1991), II, 697. See also Bento Bandeira de Mello, manuscript (1788); ANTT, Ministério do Reino, cx. [box] 555, mç. [bundle] 444.

²⁴Eidler, *Boticas & Pharmacias*, 26, 76–7.

colonists frequently ignored the rationale for, or altered the application of, indigenous healing techniques to meet their own ends and exigencies.²⁵

Medical Implications of Early Modern Colonisation in Brazil

Permanent European colonisation in Brazil began in 1532 with a small settlement near São Vicente, now in the southeastern state of São Paulo; however, periodic coastal trading had continued south of present-day Salvador da Bahia since the territory's discovery in 1500. Colonial settlement spread slowly coastwise and along navigable waterways into the interior. First contacts with the region's relatively sparse native population yielded the Portuguese few trade goods, but they gained invaluable knowledge about this strange new natural environment. The earliest profitable exports were forest products: dye woods, exotic hardwoods and medicinal plants.²⁶ Indeed, mariner's accounts from the first recorded European voyage to Brazil show that identifying useful native plants was a priority. The sailors on Pedro Álvares Cabral's voyage (1499–1500) carefully observed how indigenous peoples consumed Brazilian roots (particularly processed manioc), nuts, berries and *urucú* tree seeds (used as food or dyes), and fruits, employing them for health and sustenance.²⁷ Cabral's expedition was, after all, a commercial venture, the ultimate objective of which was to obtain spices and drugs in India; his mission orders dictated that his men seek similar practical, fungible commodities at every anchorage or port of call.²⁸

Throughout this initial period of dynamic cultural blending and information exchange, Portuguese military and missionary operational considerations fuelled interest in indigenous medical practices. At the outset, inquiries into local healing folkways 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.²⁹ Thus, systematic use and dissemination of South American medicinal plants collected or cultivated specifically for that purpose began early, in the mid-sixteenth century, soon after permanent colonial settlement began.³⁰ In the colonial military sphere, the exigencies of survival—keeping personnel losses through disease or injury to a minimum—drove inquiries into potential benefits of native medicine.

²⁵The pioneering Swiss anthropologist and ethnographer Alfred Métraux pointed out that, though early writers on Brazil listed many medicinal plant substances, they rarely indicated whether indigenous peoples had traditionally used them for healing purposes or if it was the Europeans who discovered their virtues as remedies. See Alfred Métraux, 'The Tupinambá', in Julian H. Steward (ed.), *Handbook of South American Indians*, 7 vols (Washington, DC: Smithsonian Institution, 1946–1959), III (1948), 130–1.

²⁶Joseph Smith, *A History of Brazil, 1500–2000* (London: Longman, 2002), 3–6.

²⁷'Letter of Pedro Vaz de Caminha to King Manuel' (1 May 1500), in William Brooks Greenlee (trans.), *The Voyage of Pedro Álvares Cabral to Brazil and India*

(New Delhi: Asia Educational Services, 1995) (reprint of Hakluyt Society edition; London, 1938), 24–5, 28–9, 59–60.

²⁸'Fragment of Instructions to Pedro Álvares Cabral when he went to India as Commander of a Fleet', in Greenlee, *The Voyage of Pedro Álvares Cabral*, 169–85; see also *ibid.*, x, 56–7, 91–4.

²⁹Regarding this process of knowledge exchange, see David Wade Chambers and Richard Gillespie, 'Locality in the History of Science: Colonial Science, Technoscience, and Indigenous Knowledge', *Osiris*, 2001, 228–31.

³⁰Isabel Castro Henriques and Alfredo Margarido, *Plantas e Conhecimento do Mundo nos Séculos XV e XVI* (Lisbon: Publicações Alfa; Biblioteca da Expansão Portuguesa, 1989), 75–7.

In part because of a clear necessity to reduce disease and wound casualties among sailors, soldiers, settlers and slaves³¹—strategic human resources whose loss far from home could not easily be compensated—Portuguese healing practices in the colonies displayed a tendency towards utilitarian experimentation. 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.³² Due to severely limited conventional European medical resources in Brazil and sustained exposure to indigenous methods, Portuguese medical practice in the colonies was less rigid than that taught according to the inflexible curriculum of Coimbra University, home to Portugal's sole academic faculty of medicine during the early modern period.³³ Until long-overdue reforms, introduced by royal compulsion in 1772, rationalised and revitalised medical instruction at Coimbra, the university's rigidly conservative, Jesuit-dominated administration reduced professors to intoning stagnant, unimaginative commentary on the writings of the ancient and medieval authorities: Galen, Hippocrates, Rhazes and Avicenna.³⁴

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 or maintained correspondences with colleagues (often 'New Christian' *conversos* fleeing Inquisition prosecution) who had left Portugal in the seventeenth and eighteenth centuries to practise or study in Britain, France, the Netherlands or Russia. In Lisbon, the *Todos-os-Santos* Royal Hospital trained physicians and surgeons in practical, applied medical techniques, often with reference to methods learned in the colonial tropics.³⁵ 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 Brazil. Through the normal flow of colonial commerce and personnel, such innovative practices gradually made their way to the metropole.³⁶

³¹Seventeenth-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. Ambrósio Fernandes Brandão (attributed), *Dialogues of the Great Things of Brazil*, Frederick Arthur Holden Hall, William F. Harrison, and Dorothy Winters Welker (trans. & eds) (University of New Mexico Press, 1987), 107–13. The original manuscript is in the Biblioteca Nacional de Lisboa, Portugal.

³²Juan Pimentel also notes this tendency for scientific innovation to be more active in the early modern Iberian colonies than in the metropole in 'The Iberian Vision: Science and Empire in the Framework of a Universal Monarchy, 1500–1800', in *Osiris*, 2nd Series, XV, *Nature and Empire: Science and the Colonial Enterprise* (Chicago, IL: Chicago University Press, 2000), 23–5.

³³António Barrera-Osório notes a similar qualitative difference between the colonies and metropole in the spirit and experience of naturalist or botanical inquiry in his 'Empiricism in the Spanish Atlantic World', in

Delbourgo and Dew (eds), *Science and Empire in the Atlantic World*, 178–80.

³⁴For further discussion see Timothy D. Walker, *Doctors, Folk Medicine and the Inquisition: The Repression of Magical Healing in Portugal during the Enlightenment Era* (Leiden: Brill Academic Publishers, 2005), 99–103.

³⁵*Ibid.*, 103–7, 118–34.

³⁶Júlia Ferreira Furtado 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. See her 'Tropical Empiricism: Making Medical Knowledge in Colonial Brazil', in Delbourgo and Dew (eds), *Science and Empire in the Atlantic World*, 127–30.

One example of how information about indigenous medicine may have travelled by word of mouth in the Portuguese colonial world can be found in the well-known *Diálogos das grandezas do Brasil*, an early seventeenth-century manuscript attributed to the Lisbon-born *converso* planter and writer Ambrósio Fernandes Brandão (1555–1618). This laudatory text, meant to promote colonisation in Brazil by describing the region's plants, animals, people and political circumstances, is structured as a set of exchanges between two imaginary colonists, one an experienced Brazil hand and the other an apprehensive newcomer. The manuscript's six dialogues systematically dismiss purported dangers or problems popularly attributed to the South American colony, and then proceed to extol its vast potential. The second of the dialogues addresses climate and disease directly: Brandão (the experienced protagonist) reluctantly affirms that sickness does exist in Brazil, but forcefully asserts that the diseases are so 'mild and easy to cure that they almost don't deserve the name'.³⁷ He touts the healing value of tobacco, *salsaparilha* and *pajamarióba*,³⁸ all medicinal plants in indigenous use, among the many local 'leaves and juices of herbs' that can be used to treat common ailments. Brandão next refers to a recipe for a purgative derived from a pine nut that is roasted inside a guava fruit. Wounded soldiers, he claims, are readily healed with native *copaúba* (perhaps the same as *copaiba*, described above) or a balsam confectioned from plants found in the southern provinces. A major advantage of the colony, he says, is that illnesses that usually prove fatal in India can be cured in Brazil because of the unique native medicines available there. The neophyte, Alviano, asks dubiously if the Portuguese actually make frequent use of native remedies; Brandão assures him that the European colonists do, finding the local *materia medica* so effective that surgeons, barbers and bloodletters from the metropole are rarely called upon for their services.³⁹ Although Brandão's attempt to attract settlers to Brazil downplayed health risks in the territory and exaggerated the probable efficacy of native plants, his description of colonial remedies derived from indigenous medical techniques was nevertheless accurate, drawn from practical experience.

After the mid-seventeenth century, the focus of the Portuguese colonial enterprise shifted from Asia to the Atlantic World. In Goa in 1563, Portuguese *converso* physician Garcia da Orta had published his seminal work on medicines from India, a book that introduced European natural philosophy to many Asian healing plants and methods.⁴⁰ The only other major original treatise concerning indigenous medicine produced by the Portuguese during this period, *Tratado de las siete enfermedades*, printed in Lisbon in 1623, dealt primarily with the healing flora used in West Africa and Brazil. Written in Latin and Spanish by the Coimbra-trained doctor Aleixo de Abreu, who had spent fifteen years practising medicine in Luanda and Salvador da Bahia, it was not improved upon as a didactic tool regarding Atlantic tropical medicine in the Lusophone context until the mid-eighteenth century.⁴¹

Regrettably, a faltering of scientific inquiry at the institutional and state level was typical of early modern Portuguese administration in their overseas holdings: while the Jesuits, the

³⁷Ambrósio Fernandes Brandão (attributed), *Diálogos das grandezas do Brasil*, José Antônio Gonçalves de Mello, ed. (Recife: Imprensa Universitária, 1966), 49.

³⁸Coffee senna (Linnaeus: *Cassia occidentalis*); Brandão, *Dialogues of the Great Things of Brazil*, 106, 126 note 67.

³⁹Brandão, *Diálogos das grandezas do Brasil*, 36–57. I am grateful to Dr Thomas Rogers of Emory University for alerting me to these references.

⁴⁰Garcia da Orta, *Coloquios dos Simples e Drogas e cousas medicianais da Índia ...* (Goa: 1563; facsimile edition, Lisbon: Academia das Ciências de Lisboa, 1963).

⁴¹de Abreu, *Tratado de las siete enfermedades*.

Santa Casa da Misericórdia (Holy House of Mercy) and individual *médicos* continued to operate hospitals and collect medical data in the Atlantic sphere and Asia, state resources and activities, limited as they were, remained focused on expanding trade or protecting territory. Not until the waning years of the eighteenth century did the Portuguese crown, moved at last by Enlightenment sensibilities that the rest of Europe had long since embraced, send out state-sponsored scientific expeditions to systematically study and record the flora and fauna of the overseas empire.⁴² At that late date, such activities cast a broad net, focusing on colonial holdings in Brazil, Africa and coastal southwest India.⁴³

Jesuit Missionaries and Health Care in Colonial Brazil: Assimilation of Native American Healing Knowledge

Jesuit priests were among the first Portuguese to penetrate the Brazilian interior; they founded a mission settlement near present-day São Paulo in 1554.⁴⁴ As outsiders in a South American disease environment, the Europeans often found themselves dependent on the assistance of indigenous medical practitioners to heal them of regional maladies or afflictions.⁴⁵ From earlier experience in Africa and Asia, missionaries recognised that native cultures often harboured a great store of folk knowledge about useful local medicinal plants. 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 remedies and their natural ingredients. Within a generation of initial 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.⁴⁶

As a core component of their evangelical activities, most missionary orders also founded infirmaries and apothecaries in colonial enclaves throughout the Lusophone world to treat the sick and help win conversions. There they dispensed imported and local drugs, and sold prepared remedies using ingredients gathered from Europe, India, Brazil and other Portuguese imperial regions.⁴⁷ Taken together, such remedies represented a gradually developing hybridised Luso-colonial medical culture.⁴⁸ In Brazil, this process of syncretism followed a similar pattern.

⁴²A. J. R. Russell-Wood, *A World on the Move: The Portuguese in Africa, Asia and America, 1415–1808* (Manchester: Carcanet Press, 1992), 83–5.

⁴³Timothy D. Walker, 'Acquisition and Circulation of Medical Knowledge within the Portuguese Colonial Empire during the Early Modern Period', in Daniela Bleichmar, et al., *Science, Power, 257–60, 267–8*; José Pinto de Azeredo, *Ensaíos sobre algumas enfermidades de Angola* (Lisbon: Regia Officina Typografica, 1799).

⁴⁴Smith, *A History of Brazil*, 3.

⁴⁵Santos Filho, *História da Medicina no Brasil*, I, 48–50; II, 26–30. See also BNRJ, 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.

⁴⁶For example, Bibliothèque nationale de France (Paris), Department of Manuscripts, Fonds Portugais No. 59,

Breve compêndio de várias receitas de medicina (1598), ff. 2–79v; also BNRJ, Brazil; Manuscripts Division; Nr. I-15, 02, 026, ff. 1–280 (c. 1580); and Archivum Romanum Societatis Iesu (Archivum Romanum Societatis Iesu (Society of Jesus Archive; hereafter ARSI); Rome, Italy), Opp. NN. 17, *Colecção de Várias Receitas e Segredos Particulares das Principais Boticas da Nossa Companhia de Portugal, da Índia, de Macao e do Brasil* (1766), 1–494.

⁴⁷For examples from the *Estado da Índia*, see Historical Archive of Goa (India; hereafter HAG) Nr. 9477, ff. 43, 58, 90 and 141. See also HAG 7887, ff. 2v, 7r, 9v and 40–43.

⁴⁸On the conceptual problems raised by the term 'hybridity' see Peter Burke, *Cultural Hybridity* (Cambridge: Polity Press, 2009), 34–65.

Over time, the Jesuit missionary brotherhood developed and codified the primary European body of expertise about indigenous medicine in the Portuguese colonies. Recognising the potential for profit from commercialising native drugs, the Jesuits quickly became the principal disseminators of these healing commodities, and the specialised knowledge of how to prepare and use them, throughout the Portuguese maritime world. Their multiple extant field manuals detail indigenous medicinal plants and remedies with striking precision, evince a remarkable respect for local healing knowledge, and even a subtle though tacit regard for indigenous epistemological conceits.⁴⁹ 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.⁵⁰ Jesuit *padres* and lay clergy in South America, as elsewhere in the Iberian colonial world, excelled in discovering and experimenting with indigenous medicinal substances, knowledge which they carefully recorded in manuscript texts circulated amongst their brethren. Even their secular contemporaries in Brazil acknowledged the peripatetic, highly trained Jesuits as the unparalleled leaders in indigenous medical prospecting.⁵¹

Most permanent Jesuit colonial missions in Brazil operated medical facilities—typically an infirmary and a pharmacy—from which they dispensed medical compositions for a profit. 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. Most had been pioneered by and settled around a Jesuit mission; the resident *padres* were often the sole resource for learned medical consultations in any given province. By the middle eighteenth century, Jesuit medical activities had expanded to include thirty pharmacies and infirmaries across Brazil.⁵² In many enclaves, Jesuit pharmacies were the only source from which to purchase imported drugs or prepared medical remedies.⁵³

In approximately 1580, Jesuits working in South America compiled a detailed manuscript volume of diverse native remedies found in Paraguay, Chile and Brazil. This tome is typical of other hand-written medical field guides that Jesuit missionaries produced wherever they interacted with indigenous peoples.⁵⁴ A meticulous copy of this manuscript, probably made in the late seventeenth or early eighteenth century, 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 200 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.⁵⁵

⁴⁹Refer to Jesuit medical manuscripts cited in note 46, above.

⁵⁰Sousa Dias and Pita, 'A Botica de S. Vicente', 19–20.

⁵¹Santos Filho, *História da Medicina no Brasil*, II, 26–30.

⁵²Edler, *Boticas & Pharmacias*, 33.

⁵³Santos Filho, *História da Medicina no Brasil*, I, 112.

⁵⁴See, for example, the Bibliothèque Nationale de France (Paris; hereafter BNF), Manuscripts, Fonds Portugais

No. 59 (1598), ff. 2–79v; also ARSI, Opp. NN. 17 (1766), 1–494.

⁵⁵BNRJ, Manuscripts Division; Nr. 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.

The manuscript opens with a 30-page prologue that explains how to recognise medicinal plants growing in the wild, assess their healing properties and prepare them as curatives through cooking or drying. The prologue describes how 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 simples like *copaiba* and *ipecacuanha*.⁵⁶ Moreover, 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.⁵⁷

This remarkable tome's opening entry describes the 'Virtues of Cacao', or chocolate, made from *Theobroma cacao*, a plant native to the Amazon River headwaters and basin.⁵⁸ According to the Jesuits' text, prepared chocolate had the 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.⁵⁹ 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 recognised chocolate as a mild stimulant that could provide sustaining energy to combat hunger and fatigue.⁶⁰ This indigenous knowledge gave an added incentive to cultivate cacao trees at Jesuit mission communities.

Jesuit missionaries soon became the primary producers of cacao in Brazil, cultivating large plantations; the brotherhood monopolised the export and sale of chocolate as a medicinal commodity until the mid-eighteenth century.⁶¹ One standard piece of Jesuit pharmacy equipment in Brazil was a grinding stone, necessary to prepare many medicines, including chocolate. For example, in 1757, an inventory of the Jesuit pharmacy of Belém do Pará included '*chocolateiros*'—stone and ceramic grinding devices (similar to the Mexican *metate*) used to prepare roasted cacao beans and other medicinal substances that had to be pulverised.⁶²

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 cacao*) 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 treatment for heat

⁵⁶Edler, *Boticas & Farmácias*, 26

⁵⁷BNRJ, Manuscripts Division; Nr. I-15, 02, 026, ff. 1–7.

⁵⁸Genetic research has established the origins of all cacao in the headwaters of the Amazon River. See J. C. Motamayor *et al.*, 'Cacao domestication I: the origins of the cacao cultivated by the Mayas', *Heredity*, 2002, 89, 380–6.

⁵⁹BNRJ, Manuscripts Division; Nr. I-15, 02, 026, *Capítulo* I, 1.

⁶⁰*Ibid.*, and William Gervase Clarence-Smith, *Cocoa and Chocolate, 1765–1914* (London and New York: Routledge, 2002), 10–11. See also T. L. Dillinger *et al.*, 'Food of the gods: cure for humanity? A cultural history of the medicinal and ritual uses of chocolate', *The Journal of*

Nutrition, 2000, 130, 20575–20725; Sophie D. Coe and Michael D. Coe, *The True History of Chocolate* (New York: Thames and Hudson, 1996), 121–9, 167–9; and Timothy D. Walker, 'Cure or Confection?: Chocolate in the Portuguese Royal Court and Colonial Hospitals, 1580–1830', in Louis Grivetti and Howard Shapiro (eds), *Chocolate: History, Culture and Heritage* (Wiley, 2009), 561–7.

⁶¹See Timothy D. Walker, 'Slave Labor and Chocolate in Brazil: The Culture of Cacao Plantations in Amazonia and Bahia (17th–19th Centuries)', *Food and Foodways*, 2007, 15, 1, 79–89.

⁶²Santos Filho, *História da Medicina no Brasil*, II, 32.

rashes, or more serious skin disorders like shingles. In Portuguese enclaves in India, missionary pharmacies stocked Brazilian cocoa butter for daily application to infirmary patients, and for retail distribution to the general population; the *botica* of the Convent of Santo Agostinho in Goa listed monthly purchases of *manteiga de cacao* between 1807 and 1835.⁶³ Cocoa butter from Brazil became a preeminent topical remedy, stocked in colonial pharmacies from Macau to Timor, Mozambique and São Tomé, and in the medical chests of the Portuguese India fleet during the late eighteenth and early nineteenth centuries.⁶⁴

Availability of Brazilian Medicinals in Early Modern Portugal

Throughout the Portuguese-speaking world during the early modern period, missionary orders or monastic institutions and the colleges associated with them dominated the apothecary profession, and so controlled a virtual monopoly over the lucrative trade in medicinal substances. Regarding medicines from Brazil and the *Estado da Índia*, Jesuit druggists (*boticários*) in continental Portugal enjoyed a clear advantage, as they could rely on their brethren in Salvador da Bahia, Goa and Macau to procure and ship consignments of medicinal plants or prepared medications. Prized remedies included *Pillulas Angelicas* ('Angelic Pills', a 'suave' bowel purgative containing mercury, *jalapa* and fennel oil⁶⁵) and *Pillulas Capitais* ('Captains' Pills', a bolus said to 'purge all ill humors, particularly of the head' and 'augment all the senses, particularly sight'⁶⁶), both confected at the Jesuit College of Bahia. The Jesuits trafficked all types of South American remedies, from cheap *jalapa* resin to an expensive specialty compound called *Triaga Brasileira*, on a truly global scale, sending consignments of drugs from Brazil to India, China, Africa and Europe. Missionary orders relied on revenue from this trade to support their proselytising work. The market for colonial medicines in Portugal was largely their exclusive domain for over 200 years.⁶⁷

In seventeenth- and eighteenth-century Lisbon, for example, two of the city's most important pharmacies operated under Jesuit control. These were attached to the *Casa Professa de São Roque* and the *Colégio de Santo Antão*. Together, these two pharmacies functioned as one hub of a network of Jesuit *boticas* (apothecaries) that extended throughout the Portuguese maritime empire. Until the reign of King Dom José (1750–1777), the Jesuits and, to a lesser extent, the Dominicans, helped to drive, direct and sustain the global market in many of the exotic medicinal plants or animal-based *drogas* arriving in Europe from Portuguese territories abroad, partly because of their purchasing might, but more importantly because of their presence, influence and pharmacological expertise at those points in the empire where desirable medicinal substances could be procured.⁶⁸

Two extant pharmacy stock lists from the middle of the eighteenth century give us an idea of the relative value of Brazilian and other colonial drugs in the Lisbon market. A surviving inventory taken in 1749–50 of the pharmacy of the *Colégio de Santo Antão* provides a fair indication of the volume, price and importance of imperial drugs available in Portugal.⁶⁹

⁶³HAG, Manuscripts, volume 8030.

⁶⁴Arquivo Histórico Ultramarino (Portuguese Overseas Historical Archive, Lisbon, Portugal; hereafter AHU), São Tomé and Príncipe Collection, cx. 55, doc. 75.

⁶⁵Leite, *Artes e Ofícios dos Jesuítas no Brasil*, 289; manuscript recipe in ARSI, Opp. NN. 17, 275.

⁶⁶ARSI, Opp. NN. 17, 276–7.

⁶⁷Sousa Dias and Pita, 'A Botica de S. Vicente', 18, 21.

⁶⁸*Ibid.*, and José Pedro Sousa Dias, 'Documentos sobre duas boticas da Companhia de Jesus em Lisboa: Colégio de Santo Antão e Casa Professa de S. Roque', *Economia e Sociologia*, 2009, 88/89, 295–312.

⁶⁹Sousa Dias, 'Inovação Técnica', II, 696–702.

The other inventory, compiled in 1758, is from the *São Vicente da Fora* monastery. During this era, important *boticas* commonly kept an assortment of traditional Brazilian, Indian and Chinese medicinal substances in stock.⁷⁰

The 276 drugs listed in the *Colégio de Santo Antão* inventory are divided into categories based on their composition—animal, vegetable or mineral—and provenance. One hundred and four drugs are classified as vegetable substances; 38 of those came to Lisbon from Asia, while 10 to 12 *drogas* came originally from east Africa. By contrast, 19 vegetable drugs had come from the Americas—almost exclusively from Brazil—while 47, or nearly half, had been gathered in Europe or the Mediterranean basin.⁷¹

Comparing prices, South American drugs were only marginally more expensive than medicinal substances procured from less convenient locations further from Lisbon. In the mid-eighteenth century, Asian drugs from the *Estado da Índia* were actually cheaper on average than *drogas* originating in Brazil. Prices were determined not so much by distance travelled as by availability, demand or difficulty of manufacture.⁷² Except for a few exotic animal substances (eyes of the *caranguejo*, a kind of crab, or *cochonilha*, a medicinal additive and dye extracted from a specific insect), most medicinal drugs imported from Brazil were plant derivatives.⁷³

We may compare the 1750 *Colégio de Santo Antão* inventory with another completed in 1759 from the Jesuit apothecary of *São Roque* in Lisbon. Of the nearly 500 items listed on the survey, only about 5 per cent are identifiable as having come from the Portuguese American colonies.⁷⁴ Stocks of Brazilian items tended to be held in modest quantities, ranging usually from a single ounce to a few pounds. By far, the majority of medicinal substances listed were derived from plants of European or Mediterranean origin, reflecting the relative ease of supply for these products, as well as higher popular and professional demand for them in Portugal.⁷⁵

In 1704, an Augustinian monk and druggist originally of the Monastery of Santa Cruz in Coimbra, Dom Caetano de Santo António, produced the first pharmacopoeia written wholly in the Portuguese language; it would quickly become the most widely known, influential and authoritative Portuguese manual of remedies for physicians, surgeons and barbers.⁷⁶ In 1709, Dom Caetano transferred his activities to Lisbon when he was nominated apothecary of the renowned pharmacy at the Monastery of *São Vicente da Fora*. In this more cosmopolitan environment, de Santo António became increasingly aware of developing medical experience in northern Europe and in the Portuguese overseas colonies. This led him to thoroughly revise and reissue his pharmacopoeia, which he published in 1711

⁷⁰Arquivo Histórico do Tribunal de Contas, *Junta da Inconfidência*, nr. 112, ff. 58–73; cited in Sousa Dias, 'Inovação Técnica', II, 626–33.

⁷¹*Ibid.*, 697–9.

⁷²*Ibid.*

⁷³*Drogas e Medicamentos adquiridos pela Botica do Colégio de Santo Antão ao Droguista Lourenço Scantiglia (1749–1750)*; cited in Sousa Dias, 'Inovação Técnica', II, 696.

⁷⁴*Lista da Botica de São Roque* (Arquivo Histórico do Tribunal de Contas, *Junta da Inconfidência*, nr. 112, ff.

58–73); cited in Sousa Dias, 'Inovação Técnica', II, 626–33.

⁷⁵*Ibid.*

⁷⁶Paula Basso and João Neto, *O Real Mosteiro de S. Vicente de Fora*, in *A Botica de São Vicente de Fora* (Lisbon: Associação Nacional das Farmácias, 1994), 14. See also João Neto, 'A Botica do Real Mosteiro de S. Vicente de Fora', *Medicamento, história e sociedade* (Nova Série), 1994, i, 4, 10–11.

under the title *Pharmacopea Lusitana Reformada*. The new volume embraced more recent, innovative currents of medical knowledge.⁷⁷

Dom Caetano's new guide enjoyed great demand and wide distribution as a teaching text for pharmacology in Portugal. Subsequent editions, entitled *Pharmacopea Lusitana Aumentada* (1725 and 1754), revealed an increasingly sophisticated knowledge of pharmacology, and included an expanded awareness of medicinal plants derived through colonisation in India, China, Africa and Brazil.⁷⁸ Dom Caetano's later editions contain specific information about Brazilian medicinal plants and drugs applied in dozens of curative methods.⁷⁹ Through works like this and a few others, such as Portuguese apothecary Manuel Rodrigues Coehlo's highly derivative *Pharmacopea Tubalense*, published in Lisbon in 1735 (revised in 1751), information about *drogas* and remedies from Brazil and Asia gradually entered mainstream medical practice in metropolitan Portugal.⁸⁰ However, Portuguese folk healers and licensed physicians alike persisted in their preference for remedies from Europe, with which they were most familiar.⁸¹

There are several notable exceptions to this trend; a handful of renowned Brazilian-made medicinal compounds were exported in large quantities and sold within the Portuguese home kingdom or colonial sphere. Two particularly important examples include *rappé*, medicinal tobacco snuff, and a fabled Jesuit panacea, the mixture called *Triaga Brazilica*.

In the later seventeenth-century Brazil, tobacco cultivation and export became, after sugar, one of the most important mainstays of the export economy. Early modern Portuguese pharmacology considered tobacco a drug, a concept absorbed from Native American practice.⁸² Popular European usage embraced the promised medical merits of tobacco consumption. In his treatise on the agricultural and mineral richness of Brazil, *Culture and Opulence of Brazil through its Drugs and Mines ...* (1711), André João Antonil included several pages of commentary about the healthful effects of moderate tobacco use. Although the medical application of tobacco had been widely accepted in Europe long before, Antonil's work served to authoritatively confirm tobacco's benefits and thereby broaden the medical application of the drug. Antonil, a Jesuit priest and rector of the Jesuit College in Bahia, asserted that chewing or 'drinking' (smoking) the properly cured native American leaf, known as the '*erva santa*' or holy herb, could clear respiratory passageways and alleviate asthmatic discomfort in the chest, provide relief from an upset stomach, help digestion and even ease 'unbearable' toothache.⁸³ Antonil acknowledged that intemperate use of the drug could lead to addiction, and he was careful to express support for seventeenth-century Papal bans on tobacco use in church during religious services.

⁷⁷Dom Caetano de Santo António, *Pharmacopea Lusitana reformada methodo pratico de preparar os medicamentos na fórma Galenica, & chimica* (...) (Lisbon: Impressão no Real Mosteyro de São Vicente de Fóra, 1711); and Timothy D. Walker, 'The Early Modern Globalization of Indian Medicine: Portuguese Dissemination of Drugs and Healing Techniques from South Asia on Four Continents, 1670–1830', *Portuguese Literary and Cultural Studies*, 2010, 19, 87–9.

⁷⁸Sousa Dias and Pita, 'A Botica de S. Vicente', 23.

⁷⁹Santo António, (1711, 1725 and 1754).

⁸⁰Sousa Dias, 'Inovação Técnica', II, 609–21. Dias lists the personal medical libraries of five Lisbon *boticários*

(apothecaries), which were included in the inventories of their estates.

⁸¹Maria Benedita Araújo, *O Conhecimento Empírico dos Fármacos nos Séculos XVII e XVIII* (Lisbon: Edições Cosmos, 1992), 20–1.

⁸²José E. Mendes Ferrão, *A Aventura das Plantas e os Descobrimentos Portugueses* (Lisbon: Chaves Ferreira Publicações, 2005), 161–70.

⁸³André João Antonil, *Cultura e Opulência do Brasil por suas Drogas e Minas ...* (Lisbon: Officina Real Deslândesiana, 1711) (modern edition, Rio de Janeiro: Editora Itatiaia, 1997), 149; 156–7.

Father Antonil also touted the medical advantages of inhaling powdered tobacco, a practice copied from indigenous customs in Brazil.⁸⁴ *Rappé* is a distinctly Brazilian tobacco preparation, a type of medicated snuff that evolved in the Bahian Recôncovo, a primary tobacco-growing region. The Portuguese popularised the taking of snuff in Europe, a habit thought to impart numerous health benefits. Headache, sinus congestion, the common cold, fatigue—all could be relieved, according to the conventional wisdom of the day, with inhaled tobacco snuff.⁸⁵ *Rappé* was powdered tobacco treated with menthol or Asian camphor, then steeped in a variety of aromatic oils and combined with other plant leaves; recipes were closely guarded, since its sale brought great profits to Portuguese colonial planters, merchants, apothecaries and missionaries in Brazil. Besides being sold by pharmacies and infirmaries throughout Brazil, *rappé* was exported to the metropole and distributed through missionary medical networks across the *Estado da Índia* and Portuguese colonies in Africa.⁸⁶ Brazilian tobacco products prepared specifically for regional markets in Angola and elsewhere in West Africa became primary commodities of exchange in the slave trade, as well.⁸⁷

After 1759, when the autocratic Portuguese Prime Minister, the Marquês do Pombal, ordered the expulsion of the Jesuit order from all Portuguese-controlled territories, colonial authorities in Brazil confiscated and catalogued the banned brotherhood's goods. In Salvador, the *desembargador* (chief customs official) Francisco António da Silveira Pereira wrote a memorandum to the colonial governor, Thomé Corte Real, on 30 July 1760, referring to goods sequestered at the order's college in Bahia, and to the secret recipes of certain medications that the *padres* had sold for substantial profits.⁸⁸ Silveira Pereira's memorandum makes clear that most of the Jesuits' medicines available at their Bahian college apothecary were prepared exclusively by the brotherhood using mostly locally obtained simples.

Contrary to what is often supposed, the Jesuits and other missionary orders were not bound by a strict prohibition on engaging in commerce. 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.⁸⁹ 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).⁹⁰ Because the Jesuits were restricted from trading in conventional commercial goods, they turned to medicines and drugs as a source of revenue. Healing was a recognised and approved dimension of missionary activities; infirmaries and dispensing pharmacies had long been part of the missionary establishment. Therefore,

⁸⁴Edler, *Boticas & Pharmacias*, 24–7, 38.

⁸⁵Antonil, *Cultura e Opulência*, 156.

⁸⁶See Edler, *Boticas & Pharmacias*, 13, 127; Antonil, *Cultura e Opulência*, 157–60.

⁸⁷Bales of molasses-laced chewing tobacco were a particularly popular bartering item. José C. Curto, *Enslaving Spirits: The Portuguese–Brazilian Alcohol Trade at Luanda and Its Hinterland, c. 1550–1830* (Leiden: Brill Academic Publishers, 2004), 68–70.

⁸⁸Eduardo de Castro Almeida, *Inventário dos Documentos Relativos ao Brasil Existentes no Arquivo de Marinha e Ultramar de Lisboa*, I: 'Bahia, 1613–1762' (Rio de Janeiro: Oficinas Gráficas da Biblioteca Nacional, 1913), doc. 5018, 401.

⁸⁹Alden, *The Making of an Enterprise*, 529, text and footnote 2.

⁹⁰Charles J. Borges, *The Economics of the Goa Jesuits, 1542–1759* (New Delhi: Concept Publishing, 1994), 41, 86.

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. This is precisely why the Jesuits dealt so widely in medical drugs; theoretically they were barred from profiting on virtually any other type of trade.⁹¹

One tremendously popular Jesuit remedy particular to Brazil was *Triaga Brasileira* (sometimes referred to as *Theriaga*), a healing composition created at the *Colégio dos Jesuítas* in Bahia. Among its various attributed qualities, *Triaga Brasileira* was prescribed as an antidote for venomous animal bites or poison. The recipe called for nearly 80 separate ingredients—roots, plant extracts, gums, oils, salts—primarily gathered from among traditional healing plants in South America (black and white ipecac root, tobacco, ‘cloves’ of Maranhão, and a plant called *orelha de onça*, or ‘jaguar’s ear’), but supplemented with medicinal substances imported from elsewhere in the Portuguese colonial world (ginger, opium extract, Malabar cloves, sassafras, cinnamon oil, and myrrh resin, among others).⁹² *Triaga* was certainly an attempt to trade on the popularity of a far older blended Greek or Egyptian remedy called *Theriac* (or *Tiryac*), which had been sold as a panacea since ancient times throughout the Mediterranean, Europe and, by way of Silk Road routes, as far away as India and China.⁹³ Within Brazil, and as an exported commodity, *Triaga* became, after cacao, the second most important source of revenue of the Company of Jesus in Brazil during the eighteenth century.⁹⁴

Triaga was so popular among Salvador da Bahia inhabitants that, according to the *desembargador* Silveira Pereira, revenues from its sale had become the financial cornerstone of the Jesuit College:

With this recipe I am told within [Bahia] were earned annually three or four thousand *cruzados* ... this remedy was the primary foundation of this Apothecary, by the great sales that it had ... and because of its effect ...⁹⁵

Other Jesuit remedies in Brazil, however, came from more distant sources. Among these were recipes for medical preparations composed of South Asian indigenous medical plants, replicating local remedies from Malabar, Maduri Province and Ceylon, or mixing Indian, Chinese and African drugs with Brazilian components to make their own innovative concoctions.⁹⁶ For example, a beverage to treat indigestion and all stomach ailments, developed in the Jesuit apothecary in Bahia, included such South Asian *drogas* as musk, amber, nutmeg, cloves and cinnamon.⁹⁷ The Jesuit pharmacy in Recife created and sold a ‘singular’ remedy for fevers that, in addition to powdered cinchona, included such exotic medicinal

⁹¹In practice the Jesuits often did engage in commercial activity, sometimes with crown consent, but usually in modest volume. See Alden, *The Making of an Enterprise*, 529–31, 540–4; and Borges, *The Economics of the Goa Jesuits*, 41, 86.

⁹²The manuscript recipe for *Triaga Brasileira* is found in ARSI, Opp. NN. 17, 400–6; a revised recipe and additional notes on how and where to find the required ingredients are on 407–12. A transcription of the recipe can be found in Leite, *Artes e Ofícios dos Jesuítas no Brasil*, 295–8.

⁹³Lise Manniche, *Sacred Luxuries: Fragrance, Aromatherapy, and Cosmetics in Ancient Egypt* (Ithaca, NY: Cornell University Press, 1999), ch. 3.

⁹⁴Edler, *Boticas & Farmácias*, 32; Walker, ‘Slave Labor and Chocolate in Brazil’, 85–8.

⁹⁵Castro Almeida, *Inventário dos Documentos*, 401.

⁹⁶*Ibid.* See also the diverse remedies in ARSI, Opp. NN. 17.

⁹⁷ARSI, Opp. NN. 17, 360–1.

substances from India as artificial bezoar stone, made by missionary brethren in Goa, and *Pedra de Cananor*, a prepared remedy from Kannur.⁹⁸

Some small proportion of the Jesuits' supply of medicines from around the empire may have been provided through a few prominent secular pharmacies in Lisbon. Extant account books for one particular apothecary, Manuel Ferreira do Castro, show that between 1738 and 1760, he regularly exported valuable consignments of European and Asian *drogas* to various colonial ports in Brazil. The majority of shipments during this 22-year period were destined for Salvador de Bahia, then the colonial capital; shipments ceased following the Jesuits' expulsion.⁹⁹

An account of colonial medical facilities must also note the impact of the *Santa Casa da Misericórdia*, a Portuguese charitable religious institution,¹⁰⁰ which founded a broad network of hospitals across Brazil between 1549 and 1789. The earliest of these, located in Salvador da Bahia, was followed by sixteenth-century installations at Olinda (c.1560), Sergipe, Itamaracá, Espírito Santo and Rio de Janeiro (1582). In the seventeenth century, the *Santa Casa da Misericórdia* built and operated important medical facilities at São Paulo, Paraíba, Recife and São Luís do Maranhão. Sizable eighteenth-century installations were founded at Ouro Preto, Belem do Pará, Campos and São João del Rei.¹⁰¹

Misericórdia hospitals, alongside Jesuit pharmacies and infirmaries, formed the core of Brazil's medical care-giving capacity during the colonial period. This network of medical facilities, expanded the collection, adoption and dissemination of knowledge drawn from indigenous healing practices in Brazil. The broad geographical distribution of these hospitals, located on Brazil's coasts, in ports and along interior waterways, meant that they functioned as nodal exchange points for indigenous and European medical information. Misericórdia and Jesuit medical installations were simultaneously frontier absorption points for knowledge about healing practices among native peoples, and distribution points for remedies and methods arriving from the metropole and elsewhere in the empire. Given their isolated circumstances, colonial practitioners were obliged to explore and adopt local South American remedies for treating common illnesses, just as their counterparts did in other imperial locations.¹⁰²

Another factor that hastened the adoption and continued use of native medicinal plants by colonists in Brazil was that, for much of the imperial period, few European doctors and surgeons could be induced to leave the relative comfort of continental Portugal for service in the colonies. This chronic problem was first seen in India in the sixteenth and seventeenth centuries, but Brazil also lacked European medical professionals.¹⁰³ With few

⁹⁸ARSI, Opp. NN. 17, 71–2.

⁹⁹Arquivo Nacional da Torre do Tombo (National Archives of Portugal; hereafter ANTT), *Livros dos Feitos Findos*, No. 85: 'Livro de Carregações de produtos de Botica de Manuel Ferreira do Castro (1738–1760)'. I am indebted to Benjamin Breen of the University of Texas, Austin for this reference.

¹⁰⁰The 'Holy House of Mercy', founded in 1498 with support from Queen Leonor to look after the health and welfare of Portuguese subjects, including those engaged in colonial expansion. See A. J. R. Russell-Wood, *Fidalgos and Philanthropists: The Santa Casa da Misericórdia of Bahia, 1550–1755* (Berkeley, CA:

University of California Press, 1968), introduction and 260–94.

¹⁰¹Santos Filho, *História da Medicina no Brasil*, I, 346–53; Russell-Wood, *Fidalgos and Philanthropists*, 260–94.

¹⁰²For example, see Shembaganur Province Archives, Sacred Heart College, Kodaikanal, Tamil Nadu, India; Annual Jesuit Missionary Letters of the Malabar Province; Shelf 211, Book 34 (1606–43), 30–44, 47–50, 52–3, 78; Book 102 (1655–66), 87–91, 221–7.

¹⁰³Walker, 'Acquisition and Circulation', 256–60.

resident practitioners of conventional medicine, the settlers and immigrants of colonial communities often relied by default on indigenous healing practices. In Brazil's urban areas, this situation began to change slowly during the economic boom of the eighteenth century; even so, trained medical practitioners rarely ventured beyond the main cities.¹⁰⁴ In Cachoeira, an important river port in the Bahia interior, for example, the Brazilian Viceroy complained that 'there are currently only 3 or 4 surgeons and many other apothecaries, and of all of them there is not one who will do ...' because none had been professionally trained in Europe.¹⁰⁵

Many physicians and surgeons who did seek service abroad were of highly dubious quality. In theory, only those who held a state-issued medical licence could practise in the Portuguese colonies or aboard royal ships. However, a paucity of medical schools in the metropole necessitated continuing the tradition of licensing physicians and surgeons whose only training consisted of an all-too-brief apprenticeship with an established licensed *médico*. In practice, this meant that anyone who could pass a test administered by designates of the chief physician or chief surgeon of the realm—and pay the required fee—could legally practice medicine in Portugal or its overseas territories.¹⁰⁶

Export of Brazilian Medicines: Drugs from Brazil shipped to Lisbon and the Portuguese Colonies

Records of consignments of medicines shipped from colonial Brazil to Macau, Timor, Mozambique, Goa, São Tomé and continental Portugal provide further into about the acquisition and circulation of indigenous Brazilian medical knowledge within the Portuguese empire. Colonial officials supplied drugs to stock shipboard medical chests or regional colonial hospital facilities, and merchants and missionaries in Brazil shipped consignments of indigenous drugs, aboard vessels bound for Lisbon, West Africa and the *Estado da Índia*.¹⁰⁷ South American healing techniques and medicinal preparations thus became widely known in Portuguese-controlled enclaves in the Atlantic and Pacific Oceans, far from their indigenous roots, and were fully incorporated into the lexicon of tropical medicine in the Luso-phone colonies.¹⁰⁸ Moreover, through diverse interconnected commercial exchanges, professional medical contacts, and the dissemination of rare texts by early naturalists, aspects of indigenous healing knowledge from Portuguese-held Brazil gradually became known across Europe and even within contemporary Dutch, English, French and Spanish maritime enclaves.¹⁰⁹

¹⁰⁴Santos Filho, *História da Medicina no Brasil*, I, 50–1.

¹⁰⁵Conde dos Arcos, memorandum of 8 October 1757; in Castro Almeida, I, *Inventário dos Documentos*, doc. 291, 255–6.

¹⁰⁶Francis A. Dutra, 'The Practice of Medicine in Early Modern Portugal: The Role and Social Status of the *Físico-mor* and the *Surgião-mor*', in Israel J. Katz (ed.), *Libraries, History, Diplomacy and the Performing Arts. Essays in Honor of Carleton Sprague Smith* (Stuyvesant, NY: Pendragon Press, in cooperation with the New York Public Library, 1991), 135–6.

¹⁰⁷See, for example, HAG Livros dos Monções do Reino (annual volumes of official state correspondence

from and to the *Estado da Índia*; hereafter MR) 46A, ff. 96r–97v (report of medicines and their prices sent from Goa to the *Hospital Novo* of Moçambique, 1681); HAG 7926, f. 56r/v (report of medicines sent from *Hospital Real* of Goa to the Fortress of Diu, 1785); and HAG 1346: 'Relação dos Medicamentos que fazem prezio para o Hospital Publico Militar dos Ilhas de Soldar e Timor' (Dili, 5 May 1838), f. 183.

¹⁰⁸Walker, 'Acquisition and Circulation', 260–2, 266–7.

¹⁰⁹Cook, *Matters of Exchange*, 210–25; Russell-Wood, *A World on the Move*, 123–47; David Freedberg, 'Ciência, Comércio e Arte', in Paulo Herkenhoff (ed.), *O Brasil e os Holandeses* (Rio de Janeiro:

Such knowledge proliferated despite the fact that the Portuguese strived to maintain a closed mercantilist system, seeking continuously to impose rules extremely restrictive of commercial links with competing empires' colonial enclaves.¹¹⁰ However, Imperial frontiers were a permeable membrane, and regulations failed to fully interdict the distribution of, or dissemination of information about, popular curative plants and prepared remedies.

Throughout much of the early modern period, the Asia-bound ships of the annual Portuguese India fleet, the *Carreira da Índia*, carried cargos of cocoa butter, cinchona bark, ipecacuanha, jalapa, and other South American drugs to Mozambique and India. Brazilian medicines travelled eastward from Goa in Portuguese-licensed vessels to Malacca, Timor and Macau. Despite royal prohibitions against unauthorised port stops, the Portuguese India fleet often touched at Salvador da Bahia or Rio de Janeiro on the way to Goa during the seventeenth and eighteenth centuries.¹¹¹ There the vessels could lade Brazilian products; medicines in particular were prized for their high value in low bulk quantities. Cargoes of Brazilian medicinals might also have been drawn for shipment to Asia from stocks held in Jesuit pharmacies or the royal hospital in Lisbon.¹¹²

For example, in 1681, the Portuguese *Conselho Ultramarino* decided to reorganise a royal hospital at Mozambique, shifting it from Jesuit supervision to the order of São João de Deus. The intent was to increase the hospital's efficiency as an aid station for the crews and passengers of the *Carreira da Índia* ships, which frequently stopped in Mozambique following their lengthy Atlantic passage and rounding the Cape of Good Hope. Colonial authorities ordered that a large consignment of medicines from Europe, Brazil and India be forwarded from the Royal Military Hospital in Goa to stock the Mozambique facility's pharmacy. The shipment amounted to hundreds of pounds of medicines, including a wide range of South American remedies.¹¹³ The consignment contained an unguent of ipecacuanha, powdered jalapa, cinchona (bark strips and powder), *Triaga Brasileira* and distilled alcoholic beverages like *cachaça* (Brazilian sugar cane rum) and *aguardente* (Portuguese brandy, similar to Italian *grappa*).

Also included was *feni*, a strong drink unique to Goa, often used medicinally, made by distilling fermented cashew fruit juice. Cashew *feni* provides an example of a remedy being made from flora transplanted from Brazil, but which was applied medicinally after being adopted and cultivated in South Asia.¹¹⁴ Traditionally in Brazil, raw cashew juice served as a laxative, to address fever or calm the stomach,¹¹⁵ but when fermented or distilled into an alcoholic beverage in India, it became a common home remedy, administered as

Sextante Artes, 1999), 195–202. Primary sources that confirm this trend include BNRJ, Manuscripts Division, I-15, 02, 026 (c. 1580); and ARSI, Opp. NN. 17 (1766).

¹¹⁰Even their closest allies, the British, were denied direct trade access to Brazilian markets until 1807; the exception is a short-lived period of Anglo-Brazilian trade allowed by the 1661 treaty betrothing Catherine of Braganza to Charles II. G. V. Scammell, "A Very Profitable and Advantageous Trade": British Smuggling in the Iberian Americas circa 1500–1750', *Itinerario*, 2000, 24, 3–4, 151–2; V. M. Shillington and A. B. W. Chapman, *The Commercial Relations of England and Portugal* (London, 1907), 207–14.

¹¹¹In Artur Teodóro Matos and Luís Felipe Thomaz (eds), *A Carreira da Índia e as Rotas dos Estreitos* (Angra do Heroísmo: 1998), see M. Augusta Lima Cruz, 'As viagens extraordinárias pela Rota do Cabo (1505–1570)', 581–96; and Ana Maria Ferreira, 'A Carreira da Índia na segunda metade do século XVIII; O exemplo de uma vinda de Goa', 269–94.

¹¹²Maria de Jesus dos Mártires Lopes, *Goa Setecentista: Tradição e Modernidade (1750–1800)* (2nd edn, Lisbon: Universidade Católica, 1999), 285.

¹¹³HAG MR 46A (1681–1682), ff. 96r–97v (January 1682).

¹¹⁴Ferrão, *A Aventura das Plantas*, 109–115.

¹¹⁵Edler, *Boticas & Farmácias*, 76–7.

an infusion and decoction. Goan hospitals also distributed *feni* as a heated medicinal beverage. The Portuguese introduced cashew trees into India from Brazil, and the European presence stimulated distilling activities in Goa, but indigenous medicine along the Malabar Coast embraced 'cashew wine' (*vinho de cajú* or *arrack*) and spirits as a pain killer, decongestant and for the relief of respiratory ailments.¹¹⁶ In this instance, Portuguese contact resulted in the addition of a Brazilian plant to the medical lexicon of indigenous peoples in India.

Colonial Dutch Medical Works about Brazil

Competitive Dutch and Portuguese colonial ambitions collided in Brazil in the seventeenth century, with significant ramifications for European botanical and medical knowledge. Dutch attempts to conquer and occupy parts of the Brazilian coastline (1624–54) in the hope of exploiting the colony's rich sugar producing regions also resulted in a new treatise of ethno-pharmacology being written in the Netherlands. *Historia Naturalis Brasiliae*, published in Amsterdam in 1648, was the work of three authors, all trained physicians: Georg Marcgraf; Willem Piso, who had been the personal physician of Johan Maurits of Nassau (governor of Dutch Brazil, to whom the work is dedicated); and Johannes de Laet. With its beautiful, accurate engraved images of plant and animal life, *Historia Naturalis Brasiliae* represents the first comprehensive natural history of South America.¹¹⁷

Willem Piso in particular distinguished himself as an investigative medical pioneer, and became one of the earliest northern European authorities on tropical medicine. He contributed four 'books' (chapters) with medical themes to *Historia Naturalis Brasiliae*, contained in a section entitled *De medicina Brasiliense*. These chapters include detailed descriptions of endemic regional diseases and the plant-based remedies Native Americans used to treat them. Piso wrote one discrete section of the work devoted entirely to medicinal plants, and another focusing on venoms, venomous animals and native antidotes.¹¹⁸

A decade later, in 1658, Piso published a new edition of *Historia Naturalis Brasiliae* under his name alone. The revised version ran to fourteen volumes and included dramatically expanded observations on Brazilian remedies. Piso introduced Protestant Europe to many of the unique Brazilian medicinal plants (*ipecacuanha*, *copaiba*, *jalapa*) and indigenous healing methods long known to Iberian missionaries in South America. Piso's achievement far outshone the Portuguese for detail, clarity and scientific method. Ironically, though *Historia Naturalis Brasiliae* significantly furthered the dissemination of plant remedies and healing knowledge from Brazil to northern Europe, its success had little impact on continental Portugal. As the work of a Protestant empiricist physician from a nation with which the Portuguese were at war, Piso's masterpiece was banned by the Inquisition Board of Censorship. Holy Office *familiares* and royal agents boarded inbound ships and inspected cargoes from northern Europe to insure that *Historia Naturalis Brasiliae* and other prohibited texts would not be imported to Portugal or Brazil.¹¹⁹ Hence, Piso's work remained virtually unknown in the Lusophone world until the later nineteenth century.¹²⁰

¹¹⁶HAG 831, fl. 72r (27 July 1735).

¹¹⁷Freedberg, 'Ciência, Comércio e Arte', 195–202.

¹¹⁸*Ibid.*, 200–1.

¹¹⁹The Inquisition in Portugal was not abolished until 1821; government censorship of scientific texts continued until the implementation of a new Liberal

constitution the following year. José Sebastião Silva Dias, 'Portugal e a Cultura Europeia: Séculos XVI a XVIII', in *Biblos XXVIII* (Coimbra: Universidade de Coimbra, 1952), 292–7.

¹²⁰Santos Filho, *História da Medicina no Brasil*, II, 43–8.

The Eighteenth-Century Scientific Awakening: Guides and State-sponsored Inquiries about Brazilian Medicine

The eighteenth century was literally a golden age for Brazil; wealth derived from the colony's thriving gold and diamond mines drew many immigrants, including a meagre handful of trained physicians and surgeons. Those with inquisitive spirits produced handbooks, papers or guides to the novel indigenous healing plants they encountered.¹²¹ Some with a scholarly bent went much further, creating detailed works for publication, in the hope of reaching a wide audience among interested researchers in botany or natural philosophy back in Europe.

In 1735, Portuguese-born surgeon Luís Gomes Ferreira brought out his magnum opus, *Erário Mineral* ('Mineral Treasury'),¹²² an innovative and far-ranging work published in Lisbon.¹²³ This rare book is the first comprehensive practical treatise in Portuguese describing Brazilian medical practices. Ferreira trained as a barber-surgeon before emigrating from Portugal in 1710. He settled in Minas Gerais, the mountainous mining region northwest of Rio de Janeiro, and worked as a surgeon in the miners' camps for nearly two decades before publishing his medical guide. *Erário Mineral* relates Ferreira's prolonged experience with European settlers, Amerindians and especially Afro-Brazilian slaves. Besides providing a detailed picture of the principle illnesses endemic to southeast Brazil, the author also describes the most effective regional methods of curing.¹²⁴ Ferreira includes scores of contemporary local medicines and healing compounds, together with explanations of their applications and effects. *Erário Mineral* also describes the incredibly difficult conditions under which enslaved Africans, who provided most of the mining labour and constituted the majority of the population in the district, worked; this, Ferreira noted, contributed to their chronic ailments and high rates of mortality. Such frontier conditions and a dearth of medical alternatives hastened colonists' adoption of various native healing plants.¹²⁵ By considering European knowledge alongside popular Luso-African and South American indigenous medicine, Ferreira's incisive treatise encompassed the social spectrum of colonial Brazil.

Race, of course, was an important variable in colonial popular medicine in early modern Brazil; Luso-African *curandeiros* (folk healers) were some of the most renowned and notorious purveyors of popular remedies. In fact, Luso-African folk healers could command great respect across socio-economic classes in early-modern Portuguese society, whether in the metropole or the colonies.¹²⁶ Numerous Inquisition cases involving highly regarded

¹²¹BNRJ unpublished manuscripts: I-47, 19, 20: 'Anotações Sobre Medicina Popular', ff. 1–32; and I-47, 23, 5: 'Botânica Médica Vulgar Brasileira: Drogas Orgânicas & Medicina Popular', ff. 1–17.

¹²²Gomes Ferreira, *Erário Mineral* (Lisbon, 1735).

¹²³The 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. Thomas E. Skidmore, *Brazil: Five Centuries of Change* (Oxford: Oxford University Press, 1999), 32–40.

¹²⁴See Júnia Ferreira Furtado, 'Arte e Segredo: o Licenciado Luís Gomes Ferreira e seu caleidoscópio de

imagens', in *Erário Mineral*, 2 vols, coordinated by Júnia Ferreira Furtado (Rio de Janeiro: Editora Fundação Oswaldo Cruz, 2002 [co-edition with the Fundação João Pinheiro and the Fundação de Amparo à Pesquisa of the State of Minas Gerais], I, 3–30.

¹²⁵Gomes Ferreira, *Erário Mineral*, I, *Tratado III*, 319–446.

¹²⁶Mary C. Karasch, *Slave Life in Rio de Janeiro, 1808–1850* (Princeton, NJ: Princeton University Press, 1987), 146–84; and James H. Sweet, *Domingos Alvares, African Healing, and the Intellectual History of the Atlantic World* (Chapel Hill, NC: University of North Carolina Press, 2011), 123–45.

Afro-Portuguese and Afro-Brazilian folk healers, who were prosecuted for conducting superstitious rituals as part of their curative practices, attest to their significant medical role in the Portuguese Atlantic.¹²⁷ Many Europeans accorded black healers singular respect and power based on their perceived exoticism, assuming that their origins in Africa or Brazil had provided them with healing knowledge to which white *médicos* or *curandeiros* did not have access. Thus, African men and women were, alongside their Amerindian counterparts, often the 'healers of first resort' for Portuguese sailors and colonists during the early stages of Atlantic exploration and settlement, and became exceptionally important sources or conduits of indigenous knowledge about medicinal plants and techniques transferred from Africa throughout the global empire.¹²⁸

Towards the end of the eighteenth century, the Portuguese monarchy and colonial administrators in Lisbon began to take an increasingly active interest in discovering new medicinal plants from their colonies. Sustained high losses of human capital in the tropics—not only among European soldiers, administrators and settlers, but also among valuable slaves shipped as merchandise across the Atlantic and Indian Oceans—prompted this initiative. Typically until the early nineteenth century, newly disembarked European soldiers, settlers and African slaves in Portuguese colonial enclaves suffered terribly high rates of mortality, their ranks shrinking by 25 to 50 per cent during their first year due to brutal work, harsh acclimatisation and tropical diseases.¹²⁹ Crown authorities, desperate to find effective remedies that could reduce casualties, revived their interest in discovering new indigenous remedies that could be of therapeutic and commercial use to imperial endeavours. During Queen Maria's reign (1777–1816), the *Conselho Ultramarino* commissioned medical authorities in Brazil, India and Africa to write descriptions of medicinal native plants and roots in their respective areas.¹³⁰ The desired end, of course, was to further Portuguese imperial aims by reducing the chronic, unacceptably high wastage of human resources through injury and illness.

In Brazil, a Portuguese-born physician resident in Bahia, Francisco Arsenio de Sampaio, undertook an ambitious project of pharmacological botany, entitled *History of the*

¹²⁷Timothy D. Walker, 'Les sorciers africains et l'Inquisition en Portugal, 1680–1800', *Revista Lusófona de Ciência das Religiões*, 2004, 3, 5, 83–98.

¹²⁸Hugh Glenn Cagle, 'The Botany of Colonial Medicine: Gender, Authority, and Natural History in the Empires of Spain and Portugal', in Sarah E. Owens and Jane E. Mangan (eds), *Women of the Iberian Atlantic* (Baton Rouge, LA: Louisiana State University Press, 2012), 174–94.

¹²⁹For transatlantic slave trade mortality rates, see David Eltis, *The Rise of African Slavery in the Americas* (Cambridge: Cambridge University Press, 1999), 68, 159, 185–6. For the annual number of patients treated at the *Hospital Militar* in Goa in the late 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).

¹³⁰For India, see Ignácio Caetano Afonso, *Discripçoens e Virtudes das Raizes Medicinaes*, manuscript booklet (1794), HAG MR 175, ff. 219–30; references to a similar royal directive, dated 2 April 1798, are in HAG Monções do Reino 1788 (1798–99), ff. 644–5. Also for India, see Biblioteca da Academia das Ciências de Lisboa (Academy of Sciences, Lisbon; hereafter BAEL), Mss. 21 (Série Azul): *Medicina Oriental: Socorro Indico, Aos Clamores dos Pobres Enfermos do Oriente; Para total profligação de seus males adquirida da varios Professores de Medicina* (anonymous; no date [18th century?]) 1–632. For Brazil, see Bento Bandeira de Mello, manuscript (1788); ANTT, Ministério do Reino, cx. 555, mç. 444. For Angola, see Azeredo, *Ensaios sobre algumas enfermidades de Angola*.

Vegetable, Animal and Mineral Kingdoms, pertaining to Medicine.¹³¹ Sampaio compiled this multi-volume work between 1782 and 1789 at Cachoeira, the main agricultural market town in the fertile Bahian hinterland around the Bay of All Saints. The project, because of its structure and scope, was likely produced at the behest of royal authorities in Bahia or Lisbon. Two extant tomes each contain detailed descriptions of a variety of native plants, a summary of their healing virtues, proper doses to administer to patients, and methods to apply each remedy. Sampaio's first volume is organised into twelve sections according to the plants' contemporary medicinal applications: astringent, anti-venom, anti-colic, anti-spasmodic, purgative and anti-venereal plants are each treated in their own discrete chapters. Although the painstaking work was obviously intended for publication, the project never went beyond the manuscript stage.¹³²

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 at the *Todos-os-Santos* Hospital in Lisbon), but the Bahian colonial senate approved his licence to practise.¹³³ 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 20 pages of colour miniature paintings that skilfully 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 territories overseas.¹³⁴

In 1785, another licensed practitioner who had served in Brazil, the Portuguese-born *médico* Manuel Joaquim Henriques de Paiva, issued a new compendium of medicinal plants and remedies found throughout the Lusophone world. His *Farmacopéa Lisbonense ...*, published in Lisbon,¹³⁵ contained conventional European healing methods, but the work drew heavily on Paiva's experience in South America. The author explained the healing properties of dozens of traditional Brazilian remedies and individual plants, assessing their utility and prescribing methods of application.¹³⁶ Paiva benefited from his position as personal physician of the Prince Regent, Dom João, and accompanied the Portuguese royal family to Brazil in 1808. *Farmacopéa Lisbonense* was widely distributed in Portugal and Brazil; more than any other published work of the eighteenth century, it provided accurate medical information about South American *drogas*.¹³⁷

Of the many exploratory trips through the Brazilian interior,¹³⁸ only a few were initiated as a matter of Portuguese state policy. The nine-year 'philosophical journey' of Dr Alexandre

¹³¹BNRJ, Mss I-12,01,019; Francisco Arsenio de Sampaio, *História dos Reinos Vegital, Animal e Mineral* (manuscript compiled at Cachoeira, Bahia, Brazil, 1782 [volume I] and 1789 [volume II]).

¹³²*Ibid.*; bound fair copies of the two volumes, with hand-painted illustrations of flora and fauna.

¹³³*Ibid.*, I, f. 1.

¹³⁴*Ibid.*, I, f. 1; 117–24.

¹³⁵Manoel Joaquim Henriques de Paiva, *Farmacopéa Lisbonense, ou Collecção dos simpleses, preparações e composições mais efficazes e de major uso* (Lisbon: Filipe da Silva e Azevedo, 1785), frontispiece.

¹³⁶*Ibid.*

¹³⁷In 1802 the original printer issued an expanded, corrected edition: Manoel Joaquim Henriques de Paiva, *Farmacopéa Lisbonense, ou Collecção dos simpleses, preparações e composições mais efficazes e de major uso* (Lisbon: Filipe da Silva e Azevedo, 1802).

¹³⁸Such expeditions were usually accomplished by gold- and slave-seeking quasi-military bands of frontiersmen called *bandeirantes*. See Smith, *A History of Brazil*, 10–2, 16–17.

Rodrigues Ferreira stands out for this reason, and for the significance of its medical and botanical discoveries. Because of his pioneering descriptions of Amazonian flora and fauna, Brazilians remember Ferreira as their first native-born naturalist. Born in 1756 to a wealthy merchant in Salvador da Bahia, he was sent to Portugal to complete his studies at the University of Coimbra. In 1779, after earning a doctorate in natural history, Ferreira was employed at the royal botanical gardens of the Ajuda Palace in Lisbon, where he gained favour with Queen Maria I.¹³⁹ In 1783, Maria (who had founded the *Real Academia das Ciências de Lisboa* in 1778) selected Ferreira to explore and map the then barely known regions of the Brazilian tropics (Grão-Pará, Rio Negro, Mato Grosso and Cuiabá), searching for natural resources that could be exploited for the economic benefit of the empire. Ferreira experimented with native plants that he encountered along the way.¹⁴⁰

In 1788, five years after Ferreira began his quest, Brazilian physician and natural scientist Bento Bandeira de Mello submitted a lengthy memorandum on frequently used indigenous medicines in coastal northeastern Brazil. Under royal order from Queen Maria and the Overseas Council; de Mello had been charged with creating an alphabetical list of medicinal plants, fruits and roots from Pernambuco and Paraíba, with commentary concerning their curative effects.¹⁴¹ His annotated roster, containing 59 different medicinal plants, runs to 24 manuscript folios. 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.¹⁴²

Just before the turn of the nineteenth century, the newly appointed colonial governor of the Maranhão district, Dom Diogo de Sousa, commissioned several descriptive works regarding potentially useful Brazilian plants for commerce or medicine. Appointed agents began to compile this information in the interior forests of the district in 1798; his instructions to promote this project had come directly from the *Conselho Ultramarino*. Three works arrived in Lisbon by 1801: two folios of watercolour botanical illustrations and one manuscript describing the plants' uses.¹⁴³ The two compilations of plant illustrations, together containing some 55 varieties in all, focus mainly on species that had indigenous medical applications. These include the stimulant *guaraná*, a widely-used healing shrub called *pau d'arco*, and flora to alleviate fevers, asthma, urinary problems, skin disorders and even to promote hair growth.¹⁴⁴ The manuscript, entitled 'Botanical Guide to Some Plants from the Interior of Piauí,' was compiled by Vicente Jorge Dias Cabral, a Coimbra University philosophy graduate turned amateur botanist. Cabral's 30-page text describes the appearance and application of 23 medicinal plants.¹⁴⁵

¹³⁹Nisia Trindade Lima, director, *A Ciência dos Viajantes: natureza, populações, e saúde em 500 anos de interpretações do Brasil* (Rio de Janeiro: Fundação Oswaldo Cruz, 2000), 40–1.

¹⁴⁰*Ibid.*, and BNRI, Manuscripts Division, Coleção Alexandre Rodrigues Ferreira. The full description of Ferreira's trip, *Diário da Viagem Filosófica*, was published only in 1887 in the journal of the Instituto Histórico e Geográfico Brasileiro.

¹⁴¹Bento Bandeira de Mello, manuscript (1788); ANTT, Ministério do Reino, cx. 555, mç. 444.

¹⁴²*Ibid.*, f. 2.

¹⁴³José E. Mendes Ferrão, et al., *Plantas do Brasil: Flora econômica do Brasil no Século XVIII; Plantas do Maranhão-Piauí* (Lisbon: Chaves Ferreira Publicações, 2002), 9–11.

¹⁴⁴File of 24 watercolour illustrations, held in the Arquivo Histórico Ultramarino (AHU-ACL-CU-016, cx. 25, D.1311). A contemporary portfolio of 31 botanical illustrations from Brazil, called 'Plantas do Piauí', is held at the Library of the Museum of the Royal Botanical Garden (Lisbon; hereafter BMJB), Nr. E 166/24.

¹⁴⁵In Portuguese, 'Ensaio Botânico de algumas plantas de parte interior do Piauí ...' (AHU-ACL-CU-016, cx.

When faced with the prospect of losing their prized South American colony in the early nineteenth century, prescient Portuguese imperial agents transplanted useful medicinal plants from Brazil to other locations within the empire. After Brazilian independence, Portuguese colonists continued to cultivate and exploit Brazilian healing plants in Africa, India and Europe. For example, at São Tomé, the tiny equatorial island off the West African coast, the Portuguese transplanted coffee, cacao and cinchona trees from the Amazon basin. Cinchona, of course, had been known in Brazil since the second half of the seventeenth century as the source of *quina*, or quinine, the most effective treatment for malaria and other fevers.¹⁴⁶ São Tomé's large plantations, with their fertile volcanic soil, were soon producing hundreds of kilos of cinchona bark annually for export; quinine from São Tomé saved countless settlers' lives,¹⁴⁷ and facilitated Portuguese expansion into the interior of their African territories during the nineteenth century.¹⁴⁸

Conclusion

Over three centuries of Portuguese colonial rule, Brazil's indigenous peoples and unique flora contributed significantly to the eclectic, cosmopolitan, syncretic medical culture that developed within the colonial Lusophone world. Systematic Portuguese maritime exploration in the tropics began in the 1430s, predating by far any other European effort; consequently, Portuguese exposure to tropical diseases, as well as various indigenous cultural methods of treating them, lasted far longer than that of any other European nation. Necessity combined with long familiarity resulted in the marked Portuguese tendency for receptiveness toward the adoption and dissemination of indigenous medical practices. Through numerous ecclesiastical, commercial and professional medical channels, knowledge of South American botanicals and healing techniques circulated throughout the Atlantic World and beyond, enriching medical resources in European imperial enclaves around the globe. Some drugs, like cinchona, actually acted as a catalyst, allowing for the marked expansion of European power over territories in the tropics during the early modern period.

As we have seen, exchanges of medical knowledge in colonial Brazil occurred on a variety of levels; in any given case, much depended on the preexisting knowledge, skills, and requirements of the persons directly involved. In the missionary context, protracted exchanges 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 Tupí or Guaraní shamans with whom they interacted. 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 evangelising ends resulted in a more subtle and detailed understanding. The theological implications of their reliance

25, D.1311); also includes information about Brazilian native woods exploitable for shipbuilding.

¹⁴⁶HAG MR 46A (1681–82), ff. 96r–97v.

¹⁴⁷AHU, São Tomé and Príncipe Collection; cx. 55, doc. 75.

¹⁴⁸Arquivo Histórico do São Tomé e Príncipe (National Archives of São Tomé and Príncipe; hereafter

AHSTP), *Alfandega* [Customs] records of São Tomé town port, 1 February 1899; and *Sociedade e Emigração para São Thomé e Príncipe* (Relatório da Direcção; Paracer do Conselho Fiscal; Lista dos Acionistas, 2^a Anno) (Lisbon, 1914), 93.

on indigenous *materia medica*, though, must have given pause to evangelicals who were constantly at pains to demonstrate the superiority of Old World religion and culture.¹⁴⁹

Only in the late eighteenth century, near the end of colonial era, did an interest in the exploitation of indigenous remedies awaken within the core government administrators of the Portuguese empire, leading to the commissioning of systematic surveys of Brazil's medicinal plants by professionals with botanical or medical training. The result, though, was little different from what Jesuit priests had produced over 200 years before: lists of known indigenous plants, compiled meticulously but unscientifically, combined with descriptions of their use according to how colonists and natives applied them. By this time, centrally organised scientific exploration had long been underway in rival Dutch, English and French colonies; in each respective imperial enterprise, empiricism had become a common component. Even though Jesuit missionaries in Portuguese colonies had conducted the earliest European medical and ethno-botanical explorations in the tropics, the broad historic impact of later Portuguese scientific endeavour was limited by having begun belatedly, and because little of these efforts ever achieved, or were even meant for, circulation within Europe's international scientific or intellectual communities. Instead, these newly gathered reports, the knowledge within them still regarded as strategic imperial commercial information, usually remained hidden from the general public and therefore languished, awaiting discovery by modern researchers.

Appendix: Descriptions of Drugs Exported from Brazil available in Lisbon and the Portuguese Colonies

Cacao and Cocoa Butter:¹⁵⁰ The Portuguese commonly used chocolate medicinally. At the court-in-exile in nineteenth-century Rio de Janeiro, the 'Chocolatier of the Royal Household' created confections, but he was also attached to the Royal Military Hospital, supplying a thick cocoa beverage to invalid troops for its presumed recuperative powers. He also extracted medicinal cocoa butter, prescribed for skin diseases or sold for profit in the hospital pharmacy.¹⁵¹ In 1812, the apothecary of the Convent of Santo Agostinho in Goa bought Brazilian cocoa butter to restock his pharmacy's supply.¹⁵² In 1824, powdered cocoa (mixed into a restorative beverage) and cocoa butter for skin ailments were sent from Lisbon to the island of Príncipe for the treatment of Portuguese soldiers.¹⁵³

Ipecacuanha (also called Cipó):¹⁵⁴ A popular and versatile medicine, ipecacuanha root was introduced into European therapeutics in the late sixteenth century from Portuguese territories in South America. Ipecacuanha is a transliteration of an indigenous Tupí name

¹⁴⁹For comparative insight into this process and dynamic in Spanish American colonies, see António Barrera-Osorio, 'Knowledge and Empiricism in the Sixteenth-Century Spanish Atlantic World', and Daniela Bleichmar, 'A Visible and Useful Empire: Visual Culture and Colonial Natural History in the Eighteenth-Century Spanish World'; both in Bleichmar, *et al.*, *Science, Power*, 219–32 and 290–310, respectively.

¹⁵⁰Ferrão, *A Aventura das Plantas*, 96–107.

¹⁵¹BNRJ, Manuscripts Division; C-1052, 102, docs. 1 and 2.

¹⁵²HAG 8030: 'Botica do Convento do Santo Agostinho' (1807–5), f. 28.

¹⁵³AHU; São Tomé; *caixa* 55; doc. 29 (4 September 1824).

¹⁵⁴Vicente Jorge Dias Cabral (1801), 'Ensaio Botânico de algumas plantas de parte interior do Piauí...', AHU (AHU-ACL-CU-016, cx. 25, D.1311)(1801). Also, 'Plantas do Piauí', Biblioteca do Museu do Jardim Botânico, Lisbon (Nr. E 166/24); illustration 17.

meaning 'vine that makes one vomit'. Syrup of ipecac was employed for dysentery, while the pulverized root gained favour as a reliable emetic and diaphoretic.¹⁵⁵ In 1682, a prepared 'unguent of ipecac' was trans-shipped through Goa to Mozambique to stock the colonial hospital.¹⁵⁶ Its use by Portuguese practitioners was common in India and Macau during the eighteenth century.¹⁵⁷ In 1822, a shipment of drugs sent from Lisbon to the garrison at São Tomé island included Brazilian ipecacuanha.¹⁵⁸

Cinchona Bark (also called Quineira):¹⁵⁹ The bark of the cinchona tree (*quineira*), known since the mid-seventeenth century as a treatment for malaria and other debilitating tropical fevers, became one of Brazil's primary medical exports. Portuguese Jesuit missionaries found cinchona growing wild in the Amazon; they began to cultivate the tree for commerce in the late seventeenth century. In 1681, Portuguese physician Fernando Mendes (who served Queen Catherine of Bragança and her husband, Charles II of England) became the first physician in England to use cinchona-derived quinine to control tropical fevers. In the 1680s Mendes began exporting a quinine solution to Portugal under the name *Águas da Inglaterra* ('Waters of England').¹⁶⁰ Referred to as *quina* (or *quinaquina*), bulk shipments of Brazilian cinchona were sent throughout the Portuguese empire, either in powdered form or as strips of bark.¹⁶¹ The Jesuits incorporated powdered cinchona into several different febrifuge recipes compounded in their pharmacies in Lisbon, Macau and Rio de Janeiro; all were solutions for imbibing, and contained additional ingredients like chicory, cardamom, asparagus and wormwood.¹⁶² Pharmacies in tropical Portuguese colonies like Goa, Mozambique and Timor stocked Brazilian *quina* in substantial quantities in the late eighteenth and early nineteenth centuries.¹⁶³ In Brazil, physician Luís Gomes Ferreira wrote in his medical treatise, *Erário Mineral* (Lisbon, 1735), that a regimen of drinking doses of cinchona bark solution was the only proven remedy for any malignant fever or seizures that caused chills.¹⁶⁴ Brazilian born physician José Pinto de Azeredo, who trained in medicine at Edinburgh and Leiden, used cinchona to treat all fevers during his eight-year posting as chief physician of Angola at the end of the eighteenth century.¹⁶⁵ The Portuguese transplanted cinchona to São Tomé island in the early nineteenth century, cultivating it specifically to aid colonization efforts in Angola, Mozambique and Guiné Bissau.¹⁶⁶

Jalapa: A mild purgative known to Portuguese settlers in Brazil during the sixteenth century and subsequently widely exported to the metropole or other colonies. Jalapa was used to clear the bowels and restore humoral balances in the body, according to Galenic medicine. The Jesuit pharmacy at Salvador da Bahia manufactured a remedy called

¹⁵⁵ António José de Sousa Pinto, *Materia Medica* (Ouro Preto, Brazil: Typografia de Silva, 1837), p. 21.

¹⁵⁶ HAG Monções do Reino 46A (1681–82), ff. 96r–97v.

¹⁵⁷ The Jesuits used various ipecacuanha remedies: ARSI, Opp. NN. 17 (1766).

¹⁵⁸ AHU, São Tomé and Príncipe Collection; cx. 54, doc. 53 (Lisbon, 11 December 1822).

¹⁵⁹ Ferrão, *A Aventura das Plantas*, 157–60.

¹⁶⁰ Joel Serrão (ed.), *Dicionário de História de Portugal*, 6 vols (Porto: Livraria Figuerinhas, 1986), V, 497; Richard Barnett, 'Dr. Jacob de Castro Sarmiento and Sephardim in Medical Practice in 18th-Century London', *Transactions of the Jewish Society of London*, 1982, XXVII, 88.

¹⁶¹ Bento Bandeira de Mello, manuscript (1788); ANTT, Ministério do Reino, cx. 555, mc. 444.

¹⁶² ARSI, Opp. NN. 17, pp. 16–18, 19–20 and 449–50, respectively.

¹⁶³ See HAG 8030, f. 28. See also HAG 1346, f. 183.

¹⁶⁴ See Gomes Ferreira, *Erário Mineral*, Tratado VI, cap. I, n. 2, v. 2, p. 516.

¹⁶⁵ Azeredo, *Ensaio sobre algumas*, xv, 22, 62–92.

¹⁶⁶ AHU, São Tomé and Príncipe Collection; cx. 55, doc. 75; and AHSTP, *Alfandega* of São Tomé, 1 February 1899. See also *Sociedade e Emigração para São Thomé e Príncipe*, Relatório da Direcção; Paracer do Conselho Fiscal; Lista dos Acionistas, 2ª Anno (Lisbon, 1914), 93.

'Jalapa Resin Pills', a purgative and cathartic known throughout the Portuguese world.¹⁶⁷ In 1682, powdered jalapa was supplied to the hospital in Mozambique.¹⁶⁸ It was also used with rhubarb in a powerful purgative called 'Silviana Pills', made at the Jesuit pharmacy in Macau during the early eighteenth century, if not before.¹⁶⁹ The *padres* there also used jalapa as part of a powdered remedy that would kill parasitic worms (popularly called *lombrigas*).¹⁷⁰ Jalapa root, resin, powder and 'tincture of jalapa' was sent to São Tomé and Príncipe during the early nineteenth century.¹⁷¹

Copaíba:¹⁷² An extract from trees tapped in the Amazon rainforest, this soothing liquid was used mainly to treat gonorrhoea. Although it had other applications (as a laxative, diuretic, antiscorbutic and antispasmodic), when consumed internally copaíba produced a characteristic odour in patients' urine and was thought to soothe inflammation caused by venereal disease.¹⁷³ The sap could also be processed into a balm for topical application, or ingested as a condensed oil.¹⁷⁴ From at least the seventeenth century, copaíba was widely exported to Asia (Goa and Macau), North America and Europe. Copaíba oil was available in pharmacies in Lisbon during the eighteenth and nineteenth centuries.¹⁷⁵

Salsaparilha: Jesuit missionaries first brought this American native root (sarsaparilla) to Portugal in the late sixteenth or early seventeenth century. One of its earliest uses was to treat syphilis, but it was also valued as a blood purifier. Indigenous South Americans used an infusion of the salsaparilha root for treating sexual impotence, rheumatism, skin ailments and as a tonic for general physical weakness; Portuguese colonists emulated native practices.¹⁷⁶ Tupí and Guaraní shamans in the Amazon employed this root against leprosy and other skin problems, such as psoriasis and dermatitis. It was also a treatment for diarrhoea and yaws.¹⁷⁷ In 1766, a Jesuit scribe recorded one pharmacy recipe for a medicinal paste that called for combining salsaparilha with red sandalwood, fennel seeds, senna and white sugar; this was used topically to treat venereal disease or other skin infections, and internally for colic or general blood purification.¹⁷⁸ Salsaparilha root and powder were regularly stocked in early modern Lisbon pharmacies,¹⁷⁹ included in medical shipments to Portuguese India during the eighteenth century,¹⁸⁰ and sent to western Africa in the early nineteenth century.¹⁸¹

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¹⁶⁷*Ibid.*, ff. 297–8.

¹⁶⁸HAG MR 46A, ff. 96r–97v.

¹⁶⁹ARSI, Opp. NN. 17, pp. 298–99.

¹⁷⁰*Ibid.*, pp. 319–20.

¹⁷¹AHU; São Tomé; cx. 55; doc. 29.

¹⁷²Edler, *Boticas & Pharmacias*, 26.

¹⁷³Sousa Pinto, *Materia Medica*, 31.

¹⁷⁴Bento Bandeira de Mello, report (1788); ANTT, Ministério do Reino, cx. 555, mç. 444.

¹⁷⁵Sousa Dias, 'Inovação Técnica', II, 697.

¹⁷⁶Luís Gomes Ferreira refers to many applications in *Erário Mineral*.

¹⁷⁷Edler, *Boticas & Pharmacias*, 26.

¹⁷⁸ARSI, Opp. NN. 17, pp. 217–18.

¹⁷⁹Sousa Dias, 'Inovação Técnica', II, 697.

¹⁸⁰For examples, see HAG MR 178B (1798–99), ff. 388–93; HAG MR 182, f. 88r/v (1803); and HAG, vol. 8030, f. 37 (1815).

¹⁸¹AHU, São Tomé and Príncipe Collection; cx. 54, doc. 53 (Lisbon, 11 December 1822).

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