

# MEDICINAL PLANTS OF BRAZIL IN THE PHARMACOPOEIAS OF THE FRIAR JOÃO DE JESUS MARIA

WELLINGTON BERNARDELLI SILVA FILHO\*

**Resumo:** Ao longo do século XVIII a literatura farmacêutica inicia um novo capítulo na história da farmácia e, em um sentido abrangente, da própria história médica portuguesa. A incessante impressão de farmacopeias, que culminaria na publicação da primeira farmacopeia oficial do Reino de Portugal em 1796, evidencia o esforço dos médicos e boticários – e posteriormente do Estado – para a regulamentação, modernização e adequação da disciplina aos métodos científicos que estavam em decurso no período. Entre os autores do período, destaca-se o monge-boticário e administrador da botica do Mosteiro de Santo Tirso, Frei João de Jesus Maria (1716-1795), autor da *Pharmacopea Dogmatica Medico-Chimica, e Theorico-Pratica e Historia Pharmaceutica das Plantas Exóticas*. Influenciado pela classificação lineana e pelos ideais de ilustração de Domenico Vandelli, as obras do Frei Jesus Maria são marcadas por um particular interesse na flora colonial, especialmente do Brasil. Para Jesus Maria, um maior conhecimento e um uso racional da flora colonial com propriedades medicinais, além do desenvolvimento das práticas terapêuticas, proporcionariam o acréscimo de novas e lucrativas fontes comerciais. Dessa forma, suas obras inventariariam diversas plantas originárias do Brasil, uma vez que estas práticas eram marcadas pelo uso popular e seriam articulados, pelo autor, aos conhecimentos científicos europeus desse período.

**Palavras-chave:** Farmacopeias; História da Farmácia Portuguesa; Botânica; História da Medicina.

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\* CIUHCT/DHFC. wbsilvafilho@gmail.com.

PhD in History of Science at the Departamento de História e Filosofia das Ciências, Universidade de Lisboa. Graduated in History at the Universidade Estadual de Maringá (UEM) and Master in History at the same institution. Researcher at the Centro Interuniversitário de História das Ciências e da Tecnologia (CIUHCT/UL).

**Abstract:** The pharmaceutical literature through the 18<sup>th</sup> century states a landmark in the history of pharmacy and, in a broader sense, in the Portuguese Medical History too. The continuous printing of pharmacy books along 18<sup>th</sup> century would culminate in the first official Portuguese pharmacopoeia in 1796, highlighting the efforts from the physicians and the apothecaries – and later, also from the State – to regulate, modernize and adapt the discipline to the scientific methods that were in progress at that period. Among the authors, is noteworthy the monk-pharmacist of the Santo Tirso Monastery, friar de Jesus Maria (1716-1795), the author of *Pharmacopoea Dogmatica Medico-Chimica, e Theorico-Pratica* and *Historia Pharmaceutica das Plantas Exóticas*, who was influenced by the Linnaean classification and the ideals of Domenico Vandelli. The pharmacopoeias of friar Jesus Maria were, then, marked by a peculiar interest in the colonial flora, particularly from Brazil. In this context, the author states that further researches along with a logical use of the colonial flora would not only give rise to a greater development of the therapeutic practices but also profitable commercial sources. In that sense, his work is remarkable by categorizing several plants from Brazil, where those practices were already marked by the popular usage, and the author later would apply to the European scientific knowledge of that period.

**Keywords:** Pharmacopoeias; History of Portuguese Pharmacy; Botany; History of Medicine.

## INTRODUCTION

The news of the first gold-bearing veins discovered in Brazil, the specific site that would be denominated *Capitania de Minas Gerais* from 1720, would be quickly spread throughout the Portuguese Empire. Although 16<sup>th</sup> century reports had identified the existence of alluvial gold in other spots of the colony, as in the south coast of São Vicente<sup>1</sup>, the amount has never been as significant as found in Minas Gerais around 1690. In spite of the good news that were expected by the Portuguese Crown since the beginning of the Portuguese occupation in the New World, the extracted amount from the colony's rivers until then was never so symbolic. Since the ports of the neighbour kingdom, for instance, would receive «naus» loaded with precious metals, only the quantity of silver would reach 30.000 tons, between the years 1560 and 1685<sup>2</sup>; while the Portuguese America, on the other hand, would not have explored a greater source of potential profit by the same period.

Impoverished by the high costs of the Imperial administration, the gold discovery was seen with great enthusiasm by the Portuguese Crown. Moreover, the revelation of the new source was especially positive due to the decline of the sugarcane agroindustry, which was the main colonial economic pillar, but suffered a strong competition between the Antilles plantations<sup>3</sup>. The slightly dark<sup>4</sup> nuggets

<sup>1</sup> LICCARDO *et al.*, 2012.

<sup>2</sup> GARNER, 1988: 899.

<sup>3</sup> SCHWARCZ & STARLING, 2015: 109.

<sup>4</sup> Most gold mines in the first half of the 18<sup>th</sup> century were withdrawn from the shores of the rivers, known as ouro de aluvião. Due to the presence of palladium in its composition, which gave the metal a slightly darkened color, the first miners called it ouro preto (black gold). This was also the later name of the main city of gold extraction of this period, formerly known as Vila Rica (MEDEIROS, 2001: 32f.).

of gold finding was a turning point for this particular colony, since the royal administration gradually grew and it became an important resource, to the detriment of the earlier preference for the East Indies. The same euphoria was also felt among the citizens, both from the colony and Portugal, in a way that the mines were quickly filled by all sorts of people. A profusion of adventurers, merchants, liberal professionals, residents from other captaincies and even foreigners, many of them without any previous experience with mining; and this, increased the rank of those who sought for a portion of the wealth from what appeared to be the Portuguese *El Dorado*.

Despite of the increasing flow of the new inhabitants, which developed the region by forming and establishing new villages, its structure, though, was not yet satisfactorily capable to withstand such large population that at the end of the century the food shortage reaches worrying levels<sup>5</sup>. This scenario, then, had been registered by the Jesuit priest André João Antonil (1649-1716) in his book *Cultura e Opulência do Brasil*, originally published in 1711, reporting the abandonment of the plantations by the settlers. Additionally, he also pointed out that the high cost of the low amount of food that could be found in the warehouses, made hunger be a constant reality for the miners. The author, hence, describes seeing, at the roads leading to the mines, «not a few dead corpses with corn cob in their hand, without any other sustenance»<sup>6</sup>.

The amount of gold, though, was too much to be ignored. Besides, the amount of gold taken in the Brazilian mines in the first seventy years of the 18<sup>th</sup> century was estimated to be more than half of what was being mined in the whole world, in comparison to the previous two centuries<sup>7</sup>. Furthermore, the Portuguese Crown has settled a severe administrative structure in regards to taxes and regulations upon the production, articulated by the *Intendência do Ouro*; which taxed both miners and counties, prohibit the commercialization of gold without the royal seal, apart from strict inspections in the drainage networks.

The Portuguese government quickly relied on the gold obtained from its colony in the New World, since it had financed almost the entirely Imperial system as well as the purchase of manufactured goods, mainly bought from England; in that sense, the entry cargos into the ports of Lisbon would be proportionately as great as the outflows. It is not surprising that the signs of production collapse around middle of 1760 would bring fear to the Portuguese Empire, as until the middle of the 18<sup>th</sup> century the gold was accounted for in tens of tons, and in the last decades became hundreds of kilos<sup>8</sup>.

In the following years the impact was clear to the Portuguese economy. If in one hand, the attitude of the Crown was to tighten the control of the taxes charged, which provoked the revolt of the

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<sup>5</sup> DIAS, 2001: 46.

<sup>6</sup> ANTONIL, 1837: 153.

<sup>7</sup> FIGUEIRÔA & SILVA, 2000: 178.

Although it is difficult to specify the actual amount of extracted gold, specially due to the existence of numerous clandestine networks and consequent evasion of a considerable part of the production, it is estimated that, only in remittances from the taxes collected by the crown, the total sent to Lisbon was 3,5 tons at 1725, 4,2 tons at 1731 and 11,5 tons at 1741 (SCHWARCZ & STARLING, 2015: 125).

<sup>8</sup> SCHWARCZ & STARLING, 2015: 125.

local elites, creating insurrection movements, such as the *Inconfidência Mineira*<sup>9</sup>. On the other hand, the Portuguese Crown began to seek both in science and technology the answer behind the decrease of the gold extraction and the improvement of its mining process in colony<sup>10</sup>. There was, as consequence, significant investment in mining machinery and development of techniques to identify new gold extraction spots; the results, however, had small effects in the decreasing amount of the extracted gold. The aftermath came in both ways: Portugal experienced a considerable decline of their income; and Minas Gerais, once the highest urban concentration of the colonial region, suffered a period of accentuated ruralisation of its social structure.

## BRAZILIAN PLANTS AND THE ECONOMIC POSSIBILITIES

As in any other European nations, the Portuguese Enlightenment was characterized by the attempt to rationalize gains from the colony, in the way that the economic potentials would be better commercially exploited. In addition, the gradual decrease in profits from the extraction of gold, as explained above, imposed this condition, finding a new source of profit was a premise that conditioned the maintenance of the colonial process. In regards to the knowledge of the natural potentialities, the Portuguese government envisioned a strategy to combine further knowledge of colonial fauna and flora along with the development of overseas trade of natural specimens. The project, thus, was directly linked the economic development of the Kingdom to the natural knowledge of the New World possessions.

The aim was relevant since Portugal had not imposed in the Brazilian nature any study of great scientific relevance during the first two centuries of colonization, which, in contrast, the Spanish had objects, in the territorial possessions, widely disseminated by documented books, as *Historia natural y moral de las Indias* written by the Spanish Jesuit José de Acosta (c.1539-1600). Several letters were produced by treaties of travellers, clergymen and settlers. They contain a rich description of the Brazilian nature, which has been found in the first century of discovery – but not many people had access to these material. Most of the works about Brazilian nature has actually never been diffused through Europe. Some examples can be inserted in this text, such as the letters written by the Jesuits Manuel da Nóbrega (1517-1570) and José de Anchieta (1534-1597), which remained closed to the Jesuit networks of communication, in spite of the meaningful representation of the knowledge of the colonial nature. Other cases like books of the *Tratado Descritivo do Brasil em 1587* by Gabriel Soares

<sup>9</sup> MAXWELL, 1995.

The *Inconfidência Mineira*, also known as *Conjuração Mineira*, was an attempted conspiracy with separatist intent fomented by military members, intellectuals, clergymen and rural landlords of Minas Gerais dissatisfied with the high taxes charged by the Portuguese Crown. The movement was dismantled at 1789, still in its elaboration phase, due to the delation of Joaquim Silvério dos Reis, one of its members. Although twelve of its members were sentenced to death, only Joaquim José da Silva Xavier, known as *Tiradentes*, was effectively executed. The date of his death (April 21) is a national holiday in Brazil, his name being inscribed among the Heroes of the Country. For more information about *Inconfidência Mineira*, its antecedents and consequences in the Portuguese Empire, see Kenneth Maxwell's book *A devassa da devassa – a Inconfidência Mineira: Brasil e Portugal (1750-1808)*.

<sup>10</sup> FIGUEIRÔA & SILVA, 2000.

de Sousa (1540-1591) and *Tratados da terra e gente do Brasil* by Fernão Cardim (c.1549-1625), remained unknown for centuries, being only published entirely in the 19<sup>th</sup> century. However, some exceptions can be found three centuries earlier: the publication of the French travellers André Thevet (1502-1590) and Jean de Léry (1536-1613), for instance, as well as the book *História da Província Santa Cruz* written by the Portuguese chronicler Pêro de Magalhães Gândavo (1540-1580), a major report about the Brazilian Nature which widespread only in Europe for decades.

The *Historia Naturalis Brasiliae* (1648), written<sup>11</sup> by George Marcgraf (1610-1644) and Guilherme Piso (1611-1678) during their service for the Dutch Crown in Brazil, was for the first time a work, that in a broad and more consistent way, described the Brazilian nature for the European naturalists<sup>12</sup>. The arrival of these naturalists occurred during the Dutch West India Company occupation of the Northeast coast of Brazil, charged by John Maurice, Prince of Nassau-Siegen (1604-1679) to whom the book was dedicated. As previously mentioned, the Gândavo's *História da Província Santa Cruz*, published almost a century earlier, was in fact the first printed book about the Brazilian nature, however, the Dutch publication differs from this one since it was printed in Latin, as the scientific language of the period, what allowed it to be widely spread and reachable to more readers. The *Historia Naturalis Brasiliae* is also distinguished by its contents: written in cohesion with the scientific literature of the 18<sup>th</sup> century; richly illustrated; engraved with unknown plants, fish, insects, mammals and reptiles from Brazil, which were received with great curiosity among the naturalists in Europe. The book was also focused in the medicinal properties of those animals and plants, in addition to the diseases that the settlers were vulnerable. In addition to the medical treaty, the work reported about geography, the population and the sugarcane plantation system in the Northeast of the Brazilian coast.

The importance of *Historia Naturalis Brasiliae* for the European intellectual community, therefore, has crossed centuries, being considered the main source for the Brazilian nature until the beginning of the 19<sup>th</sup> century<sup>13</sup>. And, despite of all those relevant subjects shown in the book, the pursuit of the understanding the Brazilian territory – undertaken by the Portuguese Crown, church and private groups or individual actions – occurred throughout the entire colonization period, but no work that has been produced could ever had the prominence like the Dutch's, in this matter.

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<sup>11</sup> Originally it was credited only to Guilherme Piso, who wrote it under the direction of Johannes de Laet (1581-1649). However, there were uncertainties about the authorship of Piso in the entire work, due the general knowledge about the relevant role of George Marcgraf, who had died in Luanda before the publication of the work, during the expedition. Ten years after the first publication, Piso reissues the work, adding new content, as the Marcgraf's *Tractatus Topographicus*, besides emphasizing that many of the iconographies of the book were drawn by Marcgraf. Thus, the historiography admit the double authorship of the *Historia Naturalis Brasiliae*, being the first part, *De Medicina Brasiliensi*, written by Piso, and the second, *Historiae Rerum Naturalium Brasiliae*, written by Marcgraf.

<sup>12</sup> EHRENPREIS, 2015: 78-86.

<sup>13</sup> In the early 19<sup>th</sup> century, due to the emergence of the new botany and zoology as well the arrival of the Portuguese Crown to Rio de Janeiro, Brazil receives a significant increase in the number of foreign expeditions in its territory. Among them, the expedition of Johann Baptist von Spix (1781-1826) and Carl Friedrich Philipp von Martius (1794-1868), which classified thousands of species of Brazilian fauna and flora. The expedition was carried out by the Austrian-German Artistic Mission, which several scientists and artists followed the princess Maria Leopoldina (1797-1826), future wife of Emperor D. Pedro I (1798-1834) to record and catalogue the local nature and landscapes. For more information, consult *A nova Atlantida de Spix e Martius: Natureza e civilizacao na Viagem pelo Brasil, 1817-1820* written by Karen Macknow Lisboa.

It was only in the last quarter of the 18<sup>th</sup> century when Portuguese scholars produced similar works – with scientific nature –, as a result of numerous scientific expeditions sponsored by the Crown in its imperial overseas expansions; among them the expedition of Alexandre Rodrigues Ferreira (1756-1815) is an outstanding example. This naturalist was educated at the University of Coimbra, and had done extensive research during his big journey through Amazonia between 1783 and 1792, studying the rivers Amazonas, Negro, Branco, Madeira, Mamoré and Guaporé<sup>14</sup>. During this journey, he reported many dossiers describing numerous species of animals and plants, geographical maps, types of fauna, flora and the population of the regions he had explored to the Lusitanian capital. These material was later compiled in several works, but, at his time the reports were not yet covering all the articles sent to Rodrigues Ferreira to Portugal<sup>15</sup>.

Although the expedition by Alexandre Rodrigues Ferreira was remarkable, this event did not represent new perspectives in terms of potentialities of the colonial nature. Instead, at the beginning of this century, there were many other researchers that have made research and transmitted the qualities and the uses of the flora and fauna of Brazil. One of them is the main object of this paper: the pharmacopoeias published in Portugal during the 18<sup>th</sup> century.

## PORTUGUESE PHARMACOPOEIAS

The 18<sup>th</sup> century was notable for a continuous and an incessant publication of pharmaceutical texts, in which several pharmacopoeias have been printed. The first one was the *Pharmacopea Lusitana*, published in 1704, and followed by six other publications of the same category. Chronologically there were: the *Pharmacopea Ulyssiponense* (1716) written by João Vigier, a french apothecary who lived most part of his life in Portugal; the *Pharmacopea Tubalense Chimico-Galenica* (1735), by Manoel Rodrigues Coelho; the *Pharmacopea portuense* (1766), by António Rodrigues Portugal; the *Pharmacopea Dogmatica Medico-Chimica, e Theorico-Pratica* (1772), by friar João de Jesus Maria; the *Farmacopéa Lisbonense* (1785) by the luso-brazilian physician Manuel Joaquim Henriques de Paiva; and finally the *Pharmacopeia Geral para o Reino, e Dominios de Portugal* (1774) written by Francisco Tavares, Professor at the Faculty of Medicine of the University of Coimbra and personal physician of the Queen D. Maria I (1734-1816).

Additionally, translations from English pharmacopoeias have also been printed, such as the *Pharmacopea Baetana*, the *Pharmacopoeia Collegii Regalis Medicorum Londinensis* and the *Pharmacopea Meadiana*. However, it is not completely assertive that the 18<sup>th</sup> century pharmacopoeias were the first publications of this genre in Portugal, even if Zacuto Lusitano (1575-1642) and Francisco Sanches (1550-1622) have written pharmacopoeias in the previous period. It is necessary to emphasize, though, that the publications of the 18<sup>th</sup> century were directed to apothecaries, while the others

<sup>14</sup> PATACA, 2006: 251.

<sup>15</sup> As an example how several unknown material is related to the Rodrigues Ferreira's voyage, in 2010 during an investigation at the University of Coimbra, were discovered several Brazilian fishes preserved in the form of herbarium and identified by Rodrigues Ferreira according to the Linnaean system.

were to physicians<sup>16</sup>. Thus, it is legitimate to say that the 18<sup>th</sup> century represents a new style of publication, aimed for the apothecaries' ability to the drug usage, recipes and its productions.

Despite of all the works being published as pharmacopoeias, there was a clear difference in the contents presented between them: both concerning the interests of the authors and the scientific paradigm that targets these publications. In a sense, the heterogeneous character varied between them, which reflects on the differences of its authors, as well as the period of publishing also was a criteria. Physicians, surgeons, apothecaries and religious apothecaries wrote their personal notions about the pharmacy, medicine and healing in their pharmacopoeias. And despite the scientific aim, there were authors who used this publications as a way to advertise their pharmacies and medicines<sup>17</sup>. To sum up, although these Portuguese pharmacopoeias presented scientifically rigorous content, they were not strictly scientific texts; instead, they were also a medium for professional and commercial expansions.

The publication of pharmacopoeias became a phenomenon among the 17<sup>th</sup> and 18<sup>th</sup> centuries, what did not only occur only in Portugal, but rather was also expressed in other European countries. The first work to inaugurate the style<sup>18</sup> was the *Pharmacopoeia Londinensis* that had its first edition in 1618, which aim was to regulate the apothecary as a profession. Other cities had their own pharmacopoeias versions: Amsterdam, Brandenburg, Stockholm and Edinburgh; to name a few. In Spain, the first pharmacopoeia was published in 1734. The first official pharmacopoeia (*Pharmacopoea Hispana*), has been printed in 1794, the same year as the first Portuguese pharmacopoeia<sup>19</sup>.

## THE BRAZILIAN DRUGS DESCRIBED BY THE PHARMACOPOEIAS

In the whole 18<sup>th</sup> century pharmacopoeias, with greater or lesser emphasis, underlined the importance of further awareness and usage of the Brazilian plants in terms of medicinal properties. Some authors, for instance, have devoted whole chapters to the exotic plants from the overseas colonies, and other parts of Europe and Asia. One of them is the *Pharmacopoea Ulyssiponense* (1716), written by João Vigier (1662-1723). One of the chapters is dedicated to parts of the *Tratado das virtudes e descrições de diversas plantas, e partes de animais do Brasil, e das mais partes da América, ou Índia Ocidental, de algumas do Oriente descobertas no último século* in order to describe the drugs coming from the Portuguese overseas colonies. In almost 60 pages, João Vigier compiled a series of natural species hitherto that was until then unfamiliar to the most of the Portuguese apothecaries, among them there were: *cajú* (*Anacardium occidentale*), *ananás* (*Ananas comosus*), *bálsamo de copaíba* (*Copaifera* sp.), *inhames* (family Dioscoreaceae), *cacau* (*Theobroma cacao*), *contra-erva* (*Dorstenia brasiliensis*), *parreira-brava* (*Abuta* sp.), *jenipapo* (*Genipa americana*), *ipecacuanha* (*Psychotria ipecacuanha*), *pau-brasil* (*Paubrasilia echinata*) and *mangaba* (*Hancornia speciosa*).

<sup>16</sup> DIAS, 2007: 75; CONCEIÇÃO *et. al.*, 2014: 50.

<sup>17</sup> DIAS, 2007: 314.

<sup>18</sup> Although the strict pharmacopoeia concept can be found in ancient texts, as Pedanius Dioscorides *De Materia Medica* (c.50), besides that the term appeared for the first time in a Basel publication on the 16<sup>th</sup> century, the *Pharmacopoeia Londinensis* was a precursor in systematizing the characteristics that would mark the subsequent pharmacopoeias.

<sup>19</sup> PITA, 1996: 176.

In addition to that, there was also the *Pharmacopea Tubalense Chimico-Galenica* (1735), written by the apothecary Manoel Rodrigues Coelho (1687-?), that contains an entire chapter for the plants from the Portuguese colonies which is entitled *Em que se dá a notícia da origem dos simples mais versados no uso médico, que das Índias, América, e de mais partes nos vêm a este Reino*. In this chapter, the author identifies species from the three natural kingdoms that can be used by the apothecaries, but, for him, the vegetable kingdom was the most effective to produce medicines. Among several Brazilian plants approached in the chapter, one has caught the apothecary's eyes: the *abutua* or *parreira-brava* (*Abutua* sp.), described as a root macerated, that once diluted in water can be used in the treatment of bloody diarrhea and many others intestinal diseases; while mixing with vinegar produces a plaster that can be suitable for healing of skin sores and cysts; and when it is cooked, it works for contusions due to labour pains, cramps, headaches, and, nonetheless, for liver sore treatments. The author also states that «besides other benefits [...] it is great for causing urine, expelling kidney stones and bladder stones»<sup>20</sup>.

Additionally, other authors that are worth mentioning in this matter were the Benedictine friar João de Jesus Maria (1716-1795), who has explored the therapeutic use of Brazilian plants the most; the main monk-pharmacist of the Santo Tirso Monastery, friar Jesus Maria who, in fact, had a distinct trajectory from the others authors of the 18<sup>th</sup> century Portuguese pharmacopoeias since he was the only author of the first Portuguese pharmacopoeia, published in 1704 also by the cleric D. Caetano de Santo António (c.1660-1739), and was directly connected to the church. The remaining authors, though, were apothecaries, surgeons or secular physicians.

The Christian authority took a noteworthy role in the writings of friar Jesus Maria, notwithstanding the previously mentioned authors had not expressed an agnostic nor anticlerical conception of medicine in their works. This condition had such effect that, for him, an apothecary, as a professional, should not expect wealth out of it, but, instead should raise Christian concept of compassion. He also declared that the pharmaceutical profession is not intended «for the poor, who need to support themselves; but only for rich people, who without oppression of the everyday urgencies will fulfil with plenty the expenses of the pharmacy»<sup>21</sup>, in way to serve the needy ones without tying the gains to the pharmacy as a material subsistence.

The contrast between the Christian conception of the pharmacy and the emergence of a secular pharmacy, based on a secular discourse of profit and rationalization of healing, was not exclusive to Portugal but rather a reality experienced in other European countries. As stated by the medical historian Roy Porter, the period between the late 18<sup>th</sup> and early 19<sup>th</sup> centuries was characterized by the trust of medicine as a knowledge that enables man to unravel the mysteries of the natural world. That perspective was also corroborated by the population boom in Europe, when the scientific development and the visible improvement affected the quality of health. In a sense, more and more secularized the medicine was consolidating its role in the field of healing, a detriment to religious authority<sup>22</sup>.

<sup>20</sup> COELHO, 1735: 189.

<sup>21</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica Medico-Chimica, e Theorico-Pratica*. Porto: na Officina de Antonio Alvares Ribeiro Guimar.

<sup>22</sup> PORTER, 1998: 302.



## THE WORKS OF FRIAR JESUS MARIA (1716-1795)

In his first work, the *Pharmacopea Dogmatica Medico-Chimica, e Theorico-Pratica*, published in the city of Porto in 1772, the friar Jesus Maria addresses an extensive number of Brazilian plants indicated as medicines. In an extracted passage of his prologue, the author states his concern about the incipient use of Brazilian plants, especially that the use could improve the trade and the development of medicine. He wrote:

*It is to be regretted, according to the news that comes from people who lived in the Americas the lack that many plants of known effectiveness do in medicine, who say they have discovered with great experience and rustic rational agility the caboclos of those states; that, be sure, could be a usefulness in medicine and to increase the commerce profits, equal that seen in the genres coming from outside the Kingdom*<sup>23</sup>.

Altogether, his *Pharmacopea Dogmatica* has 938 pages and is arranged in two different volumes. The first volume is divided into two treatises with 45 chapters, destined essentially to the medical matter, characterization of the pharmacy and presentation of pharmaceutical recipes.

The second volume is composed by three different treatises, which unlike the previous volume, does not have division by chapters. The first of these three treatises, entitled *Do Reyno Animal*, is the smallest of all. As it is clear from its title, it is intended to be regarded to the animals of the Kingdom that can be used for the pharmacy matters: The author divided the animals into three categories: fishes, birds and terrestrial animals. In addition to a study about the medical properties of these animals, the treaty also resembles a text of zoological interest, in which several specimens are portrayed without any medicinal use being attached to them. This is especially grounded for the non-European animals, such as the cetacean identified, also known as *Tritão*: «which from the middle to the top appears like a man. They say that it does a great damage in *Porto Seguro*, city below Bahia eight leagues»<sup>24</sup>.

The *Tritão* description written by friar Jesus Maria corresponds exactly to the report made by Caspar Barlaeus (1548-1648) in *Rervm per octennivm in Brasilia et alibi nuper gestarum*, that was published in 1647. The work aimed to report the Dutch colonial empire in Brazil, containing a large number of maps, illustrations and articles about the region. Barlaeus has written about the *Tritão*, which in the indigenous language are called *ipupiaras*. They «are seen seven or eight leagues from *Baía de Todos os Santos*, as well as in the vicinity of *Porto Seguro*. It is believed that they kill men, squeezing them with their embrace, not on purpose, but for affection»<sup>25</sup>. A similar description, can be found in the *Vocabulario Portuguez e Latino*, published in 1721 by Raphael Bluteau (1638-1734),

<sup>23</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas, seus produtos, naturalidades e virtudes para facilitar os conhecimentos dos vegetaes e servir de addição à Pharmacopea Dogmática*. Coimbra: [s.n.].

<sup>24</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica...* p. 13.

<sup>25</sup> BARLÊU, Gaspar – *O Brasil holandês sob o Conde João Maurício de Nassau: história dos feitos recentemente praticados durante oito anos no Brasil e noutras partes sob o governo do Ilustríssimo João Maurício Conde de Nassau, etc., ora Governador de Wesel, Tenente-General de cavalaria das Províncias – Unidas sob o Príncipe de Orange*. Tradução e notas Cláudio Brandão. Brasília: Senado Federal/Conselho Editorial, 2005, p. 164.

an English priest who has lived in Portugal since 1688. The *Tritão*, is described as «the gentile calls *Ypupiapia* [...] these Tritons swims by the rivers, seven or eight leagues from *Baía de Todos os Santos*, & near of *Porto Seguro*, where they do great damage»<sup>26</sup>.

The second treaty, *Das Agoas Mineraes, e Reyno Mineral*, starts with a brief text about the therapeutic properties of mineral waters, which was considered one of the first studies on the subject in Portuguese<sup>27</sup>, nonetheless it was published after *Materia Medica* (1735) by Jacob de Castro Sarmiento. Even though the friar Jesus Maria cites several authors throughout the study, the influence of Sarmiento (1691-1762) on his work is huge. As an example, Jesus Maria wrote in his *Pharmacopea Dogmatica* about the weight of metals<sup>28</sup>. This description is very similar to the text of *Materia Medica*<sup>29</sup>; also in the presentation of instruments capable of defining the main chemical element of a certain aqueous solution, such as the *Boylean bomb* and the *hydrostatic balance*<sup>30</sup>. In addition to his study about thermal waters, the main subject of the present treaty is describe the medicinal characteristics of chemical compounds. He compiled 186 different formulas using 56 different chemical compounds (identified by treaty their Latin and Portuguese name and presented with their French, Italian, English, Spanish and German names).

The last and most extensive treaty, named *Do Reyno Vegetal*, is a broad compendium of plants with medicinal properties and recipes for medicines made out of plants and herbs. The aim of this treaty is to highlight the importance of botany for the apothecary profession: «which being one of the three parts of Pharmacology, comes to teach the preparation, description, virtues and uses of plants»<sup>31</sup>. As well as in the *Do Reyno Animal*, the author only embodies botanical features in several excerpts, putting aside the medicinal discussion; in a sense, he explores beyond the boundaries of the pharmacy as a subject. Consequently, many questions were raised about the vegetables morphology, reproduction and nutrition, along with the denominations of the diverse vegetables classes.

The treaty gathers a total of 389 species, sorted alphabetically from their Latin binomial in addition to their names in Portuguese, Spanish, French, Italian, English and German. Moreover, in each introduction of plants has a brief description of its morphology, fruition or flowering (when it is applied), and geographical distribution. However, as far as the distribution is concerned, Jesus Maria focuses on the place where the plant can be found, and not their place of origin; such condition can be seen in the case of *Ananas aculeatus*, commonly known as pineapple or *abacaxi* (*Ananas comosus*). Native from Brazil, the pineapple was domesticated and disseminated by indigenous peoples throughout the South America, Central America and Caribbean Islands still in the period prior to the European colonization<sup>32</sup>. Nothing about the place of its origin, however, was pointed out by the author, who only

<sup>26</sup> BLUTEAU, 1721: 298.

<sup>27</sup> LEMOS, 1991: 142.

<sup>28</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica...* p. 60.

<sup>29</sup> SARMENTO, 1735: 1f.

<sup>30</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica...* p. 72 f.; SARMENTO, 1735: 339.

<sup>31</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica...* p. 1.

<sup>32</sup> FERRÃO, 1992: 55.

states that «there are many inquiring people in Lisbon and Porto who grow them in their gardens»<sup>33</sup>. And the reason for this event was because the *Pharmacopea Dogmatica* is essentially a book composed for and to apothecaries, despite it can be extended to other areas, the main end of the document was to support the pharmaceutical in the daily work. Paradigmatically, the pharmacopoeia reader's interest was to be able to find the plants and not their original place of dispersion.

The imprecision on the geographical location of the plants can also be seen in the description of *ipecacuanha* (*Psychotria ipecacuanha*). A widespread plant that can be found all over the Brazilian Atlantic forest and causes a strong urge to vomit due to the emetic present in its composition, and was synthesized in the 17<sup>th</sup> century<sup>34</sup>. Despite being natural from a Portuguese colony, the author, nevertheless, identified the plant from «dark places and gardens, particularly in Peru and Brazil»<sup>35</sup>. The author, actually, suggests four different species of *ipecacuanha*, which is distinctive by their colours from white to dark, being the gray one from Peru. Overall, the four species are defined as excellent for purging by disgorge and dysentery, a practice that was considered to be a good method to release internal obstructions of the human body<sup>36</sup>.

These qualities and features were, in fact, described by José de Anchieta and Fernão Cardim initially, in the second half of the 16<sup>th</sup> century, so its use for the treatments against poisonous plants and animals. The botanical and medical descriptions only were only made in the the following century in the *Historia Naturalis Brasiliae*. Also, the Dutch book contains an engraving of the plant, describing with precise detail the medicinal properties and the practices done by the Brazilian indigenous population. The *ipecacuanha*, though, was pretty much unknown to the outside of the Portuguese Empire until the end of the 17<sup>th</sup> century, when a new and higher status had reached the plant through the physician Jean-Adrien Helvetius (1661-1727) who healed one of the Louis XIV through a medicine made out of the *ipecacuanha*<sup>37</sup>. Since then, and obviously by Helvetius' propaganda about the medicinal properties of the *ipecacuanha*, in just few decades the Brazilian root changed from an ordinary colonial medicine to a famous and popular remedy by European erudite physicians.

The root, then, became subject for several medical and pharmaceutical books throughout the late 17<sup>th</sup> and early 18<sup>th</sup> centuries, which the most famous was the *Relatio de novo Antidysenterico Americano magnis successibus comprobato* (1696) written by the German mathematician and philosopher Gottfried Wilhelm Leibniz (1646-1716). Also, the *ipecacuanha* was an exploratory matter as an effective medicine to heal the plague in the *Traité de la Peste* (1721), characterized by Jean-Jacques Manget (1652-1742).

In the 18<sup>th</sup> century, the Portuguese medical pharmaceutical books were also very much inclined to follow the European medical field trend; significant reports about *ipecacuanha* therapeutic qualities then, emerged. Although the Portuguese pharmaceutical books were very similar in terms of

<sup>33</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica*... p. 43f.

<sup>34</sup> ASSIS & GIULIETTI, 1999: 205.

<sup>35</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica*... p. 73.

<sup>36</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica*... p. 74.

<sup>37</sup> DIAS, 2003: 318.

describing the medicinal use of the root, the ones from the late of the 18<sup>th</sup> century were way more complex than those from the earlier period. The major difference between friar Jesus Maria and other Portuguese authors consists in the way how he explained the chemical action of the plants, while, for the author, the therapeutic properties of ipecacuanha were due to the saline molecules of the root which act directly in cases of stomach obstruction, causing urine and vomiting<sup>38</sup>.

Despite of lacking noticeability in the date of the production, his second book, the *Historia Pharmaceutica das Plantas Exóticas*, was not completed until 1777, when its publication was finally approved. But, according to the *Catálogo dos Escritores Beneditinos da Congregação de Portugal*, of a friar Francisco de S. Luís, Cardeal Saraiva, the book actually took eight or nine years to be written and was kept into the S. Bento da Saúde Monastery – currently Portuguese Assembly of the Republic – until it was donated by António José Nogueira to the Sociedade Farmacêutica Lusitana in 1837<sup>39</sup>. In the last page of the book, it is written that the printing should be held in May 1800. But in spite of all the necessary licenses, the work has never been printed. One of the possible reasons may have been the publication of this time which became the official pharmacopoeia of Portugal, the *Pharmacopeia Geral*.

In comparison with the first pharmacopoeia, the *Historia Pharmaceutica das Plantas Exóticas* was influenced by the works of Domenico Vandelli (1691-1754). Several types of plants had their binomial classification credited to this Italian naturalist as well as many excerpts in which the friar Jesus Maria expresses his admiration in such magnitude that the author have come to highlight the period for being extremely positive to the botany due to the investments that members of the nobility had subsidized for the construction of botanical gardens. For the Portuguese case the friar states that he admired: «The magnificent Jardim da Ajuda; which has a large number of exotic plants, due to Domingos Vandelli's the directive and vigilant instruction»<sup>40</sup>.

After the Lisbon earthquake in 1775, the King of Portugal moved his court from Lisbon to Ajuda, where the natural phenomena had not much affected, additionally he willed to build a humanistic and scientific environment for his first-born son, D. José I (1761-1788) in this region, and, hired Vandelli to be the director of the botanical garden where there were more than 5000 species of plants, most of them being from abroad. Later, Vandelli was sent to Coimbra to lecture natural history at the University, which made friar Jesus Maria praise his lecturing to be extremely important for botany. He characterised Vandelli as «one of the greatest men of the Century»<sup>41</sup>.

Going back to the manuscript, Jesus Maria had compiled 505 species of plants in 10 chapters, some of them could be found throughout the country, but the majority were coming from abroad, so the access for the apothecaries was only possible through commercial ways. Nevertheless, most part of the plants were only outlined by its medicinal properties, and another few by their pharmaceutical recipes (in total 241, most of them being distillation recipes).

<sup>38</sup> BNP – *Fundo Geral Monografias*, S.A. 37520 V. JESUS MARIA, João de (1772) – *Pharmacopea Dogmatica...* p. 74.

<sup>39</sup> SARAIVA, 2016.

<sup>40</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 3.

<sup>41</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 5.

The author acknowledges his lack of understanding of the Brazilian plants. This complaint was clear on his statement about the little concern of the Brazilians to report the morphological characteristics and therapeutic properties of these species. One example could be the *orelha-de-onça* (probably *Tibouchina Sp.*), a plant native from Brazil with more than 35 species, that is mainly used in gardening because of its purple flowers; although its root is positive to heal coughs and pulmonary problems. About this species Jesus Maria has had nothing else to add then that the inhabitants of Bahia were «careless in discovering the medical things of their country»<sup>42</sup>. The same happens to *Raiz de Queijo*, indicated against various poisonings, headaches and uterine bleeding, but «due to the neglect of the nationals from the Americas of this Kingdom, very little facts are known about this root»<sup>43</sup>. Lastly, Jesus Maria confesses his doubts about the morphology of the plant called *Raiz de Chumbo*, sent from Bahia to Portugal to heal wounds, but he knew nothing about it. The friar affirms that a better description should be written «by Brazilians who are well educated in Botany»<sup>44</sup>.

Due to the lack of information about the Brazilian nature, friar Jesus Maria commonly supported the therapeutic indication by using the traditional uses for those plants in Brazil as an example about how effective they were to heal. One evidence can be seen in the description of *guaraná* (*Paullinia cupana*), a climbing plant native of the Amazon and especially common in Brazil, its fruit's colour ranges from brown to red and contain black seeds partly covered by white arils, like eyeballs, has about twice the concentration of caffeine found in coffee seeds. The friar writes that «a composition, which seems to be a substance or an extraction out of vegetables, made by the gentiles from Pará»<sup>45</sup>. He also indicates *guaraná* for various stomach problems, headaches, hemorrhagic diarrhea and urinary incontinence, attesting that its medical properties are in fact generous, «the gentile people uses it as a universal remedy for all his illnesses»<sup>46</sup>.

The therapeutic indication for the *cajú* (*Anacardium occidentale*) was also legitimized through the traditional indigenous use of the fruit. The cashew tree is a tropical tree that produces the cashew seed and the cashew apple. A native species from the Northeast of Brazil, but also widely spread in Southern Asia and tropical Africa. About the nut, friar Jesus Maria stressed out that they burn when they came into contact with the skin, but «the inhabitants of Brazil make from it an oil that prevents the wood rot, removes facial stains and kills the intestinal worms»<sup>47</sup>. Along with the indigenous knowledge, Jesus Maria also added that it was used by the slaves as a form of legitimation for

<sup>42</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 358.

<sup>43</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 368.

<sup>44</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 395.

<sup>45</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 255.

<sup>46</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 255.

<sup>47</sup> CDF – *Monografias Farmacêuticas*, CDF-C13.4-012-A1CB.3. JESUS MARIA, João de (1777) – *Historia Pharmaceutica das plantas exóticas...* p. 267.

the medicinal properties of certain plants; the *Páó de Canhão* as an example was identified by the Latin binomial *Lignum Pormenti* and *Ambaiba* to the Indigenous people, which the Benedictine friar pointed out that the tree grows in Brazil and to its trunk «the negroes use to heal their wounds»<sup>48</sup>.

Although popular medicine was often used as a way to legitimate the medicinal use of Brazilian plants, the author also pursued ways to combine popular knowledge to the European erudite medicine. This condition is especially present when the Benedictine friar described the *óleo da copaiba*, a resin extracted from the *copaifera* (*Copaifera sp*) a genus of flowering plants in the legume family Fabaceae. The oil extraction of that plant was widely explored by the Jesuits throughout the 17<sup>th</sup> century, being known as *the Jesuit's balsam*. Despite its use was essentially linked to traditional medicine, friar Jesus Maria emphasized that the therapeutic properties of the plant were attested by important physicians, among them were Johann Friedrich Cartheuser (1704-1777), who performed an experimentation that confirmed that the oil of Copaiba has the same medicinal properties as Terebinthin and Peruvian balsam; Thomas Fuller (1654-1734); and Friedrich Hoffmann (1660-1742), who attested that the oil intake is positive for healing infections and urinary obstructions<sup>49</sup>.

## CONCLUSION

As other medical books published in the 18<sup>th</sup> century, both works by Friar Jesus Maria (*Pharmacopea Dogmatica* and *Historia Pharmaceutica das Plantas Exóticas*) were results of the attempt to use the Brazilian nature in a more exploratory way. Historically the public policy of rationalizing the colonial resources was a feature linked to the institutional changes promoted by Marquis of Pombal. However, it was noticeable that pharmacopoeias written in the 18<sup>th</sup> century expressly contained the vindication about the necessity to raise awareness about the Brazilian medicinal plants in terms of usage and insights. In that sense, in both books of the friar Jesus Maria, the use of plants was described and supported by the traditional manipulation from the Brazilian indigenous; and, despite of this important point, the author in fact endeavoured to reconcile popular practices with European erudite medicine.

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Medicinal plants are widely used as home remedies in Brazil but several species used are native of other continents and were introduced here since the colonization, beginning in 1500. The Traditional Medicine Division of the WHO recognizes the importance of plant species used by the Amerindian as medicines, and recommends that their efficacies should be evaluated through pharmacological and toxicological assays. Aim of the study: To verify which Brazilian medicinal plants, especially those of Amerindian origin, were used in 19th century and have been evaluated by pharmacological studies. Mater The use of medicinal plants is not just a custom of the distant past. Until the beginning of 1900s medicinal plants from all over the world were fully monographed in all pharmacopoeias as legitimate medicinal ingredients. They are now presented in relatively small numbers but that is slowly changing as we rediscover the true medicinal value of plants. European laws continue to restrict not only what can be sold, but what can be said about traditional herbal remedies insisting on the randomised trial being the only source of legitimate information. A new statue of Christ being built in Brazil will be taller than the famous Redeemer statue in Rio de Janeiro. Christ the Protector in the southern city of Encantado will be 43m (140 ft) high with its pedestal, making it the world's third tallest Jesus statue. A head and outstretched arms were added to the structure last week, which was begun in 2019. The idea came from local politician Adroaldo Conzatti, who died in March with Covid-19. image copyrightGetty Images. image captionThe project is being funded by donations. The \$350,000 (Â£255,000) project is expected to be completed later in the 1 DATAPLAMT - Universidade Federal de Minas Gerais, Minas Gerais, Brazil. mbrandao@ufmg.br. PMID: 18762237. The Traditional Medicine Division of the WHO recognizes the importance of plant species used by the Amerindian as medicines, and recommends that their efficacies should be evaluated through pharmacological and toxicological assays. Aim of the study: To verify which Brazilian medicinal plants, especially those of Amerindian origin, were used in 19th century and have been evaluated by pharmacological studies. Materials and methods: Data about the use of native plants in traditional medicine were searched in bibliographic material from European naturalists who traveled throughout Minas Gerais in the