



Circulation and production of knowledge and scientific practices in southern America in the eighteenth century: an analysis of *Materia medica misionera*, a manuscript by Pedro Montenegro (1710)*

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Received for publication in February 2011.

Approved for publication in July 2011.

Translated by Rebecca Atkinson.

FLECK, Eliane Cristina Deckmann; POLETTO, Roberto. Circulation and production of knowledge and scientific practices in southern America in the eighteenth century: an analysis of *Materia medica misionera*, a manuscript by Pedro Montenegro (1710). *História, Ciências, Saúde – Manguinhos*, v.19, n.4, out.-dez. 2012. Disponível em <http://www.scielo.br/hcsm>.

Abstract

The article analyzes a 1790 manuscript copy of *Materia medica misionera*, a book written in 1710 by a Jesuit, Pedro Montenegro. Alongside knowledge of a magical or religious nature, and exotic ingredients for the recipes, this work also contains the unmistakable presence of Hippocratic and Galenic conceptions and a growing empiricism, characteristic of the scientific transformations seen in the eighteenth century. The analysis of this work also prompts reflections about the diffusion, circulation and production of pharmacological and medical knowledge in the first half of the eighteenth century within the missions and colleges installed in the area that was the Jesuit Province of Paraguay, southern America.

Keywords: medicine; treatise; scientific practice; *Materia medica misionera*; Pedro Montenegro SJ (1663-1728).

The annual letters, medical treatises, medicinal recipe books and medical botany catalogs – listed in Jesuit library inventories or prepared by missionaries in the Americas in the seventeenth and eighteenth centuries – constitute valuable sources for the analysis of conflicting conceptions of health and disease and the gradual incorporation of the native pharmacopeia and indigenous healing therapies the Jesuits learnt about in Spanish and Portuguese America.¹ Although such knowledge and procedures were initially looked down on or explicitly condemned – for their magical/ritual efficacy – the Jesuit records describe their use, as well as experiments with remedies made by some missionaries and the existence of herbariums and dispensaries in the Jesuit colleges and missions², attesting to the fact that the quest for cures for the epidemics that afflicted them prompted an increasingly rational observation of nature, the systematization of this knowledge and its practical use in the villages, missions and settlements near the Jesuit colleges in the Americas.

In a bid to assure the health of bodies and souls – conciliating the quest for martyrdom and edification with modernity and rationalism – the Jesuit missionaries ultimately lent the Society of Jesus certain features that were quite unique³ in the seventeenth and eighteenth centuries, as witnessed by the medical and pharmaceutical knowledge they produced and disseminated around several continents. We found countless references in the annual letters to classic medical works and surgical treatises, which must surely have been part of the libraries maintained at some missions and Jesuit colleges⁴, namely: *Farmacopea*, by Palácios; *Opera Medica*, by Hotosmani; two medical tomes by Carlos Muretano; *Opera Medica* and *Diccionario Medico*, by Ribera; *Cirurgía*, by Robledo; *Postemas*, by López; *Medicina*, by Guadalupe; *Cirurgía*, by Vigo; *Farmacopea*, by Matritense; *Farmacopea*, by Ceci; and *Opera Medica*, by Syderas.

In the eighteenth century in particular, there is a clear influence of European medical knowledge and the knowledge gleaned from observations and experiments in American territories⁵ in the works produced by Brother Pedro Montenegro and Fr. Segismundo Asperger, both of whom are considered pioneers in the systematization of information relating to American pharmacopeia for their work editing catalogues of medicinal plants and their respective applications. In this article, we make a more detailed analysis of *Materia medica misionera*⁶ by Jesuit brother Pedro Montenegro, so that through this we may reflect upon the diffusion, production and circulation of medical knowledge in the first half of the eighteenth century in the broad region that was the Jesuit Province of Paraguay.

Pedro Montenegro was born in Spanish Galicia in May 1663. While still young – probably in 1679 – he began his medical studies at Hospital General de Madrid, going on to join the Society of Jesus in April 1691. In the Provincial Catalog from 1703, it states that brother Montenegro “had taken his final vows on April 25th 1703, and was in the missions on the Paraná river, that his physical strength was weakened and his craft was surgery (*Chirurgus*)” (Furlong, 1947, p.67; italics in the original).⁷

The work is 458 pages long and contains 148 hand-drawn pictures of plants.⁸ The frontispiece bears an image of Our Lady of Pain, patron saint of the sick.⁹ The version we analyze in this article is, however, a manuscript copy from 1790 which is kept in the archive of Instituto Anchietano de Pesquisas (IAP), a research institute at Unisinos.¹⁰ It

does not have the drawings found in the original, and appears to have been copied by a person of limited learning in view of the grammatical errors it contains.¹¹

On healing practices and evidence of the circulation of knowledge

The situation the Jesuit missionaries were faced with when they set up the Jesuit Province of Paraguay in the early 1600's was described as follows by Fr. Marcial de Lorenzana SJ in a letter written in June 1610 to father Diego de Torres Bollo:

it is a miserable land and everything is lacking. Apart from *totorá* roots and fish there is no other food. There are countless mosquitoes ... neither by day nor at night do they leave the men in peace, for which reason my hands and my face look like those of a scabies patient or leper. Sometimes, I apply a little cornmeal for want of anything else (Annual Letter, 1927a, p.65).

The priest who wrote the annual letter of 1613 picks up on this description, adding that "there are a great many sick people, who die for lack of remedies. Furthermore, meat is not used here, for which reason there is nothing of great substance to strengthen the sick" (Annual Letter, 1927a, p.165). A similar state of affairs was described in the 1616 and 1617 letters:

Besides, with the few remedies that exist here we have sought to cure them for they do not have nor do they make remedies, being left to die. Last year there was a catarrh sickness to which almost the whole village succumbed and father Juan de Salas made them a syrup with which almost everyone was cured, although some died (Annual Letter, 1927b, p.88).¹²

In the 1626-7 letter, father Nicolas Mastrillo Durán highlights the missionaries' continued concern about how to assure a supply of food and help heal the indigenous people struck by disease: "became we have sought the medications to give them, and we give them food and we bleed them with our own hands, and this means has been the best method for taming the indigenous, especially the youngest" (Annual Letter, 1927c, p.264-266.).

The repeated reports of the lack or scarcity of medicines in the first annual letters – which indicate a dependency on European remedies and therapies and unfamiliarity with the existing stock of native medicinal recipes –, were compounded by a condemnation of indigenous healing methods, and above all the persecution of shamans, described as magi of the devil or ministers of the demon:

who do things that alarm and can only be the workings of the devil ... they use a whole ritual of gestures; they speak to the demon through the herb ... they take burning embers in their hands without being burnt and eat them by the mouthful, as if they were the most flavorsome and edible thing ... they had a hole opened in the roof where the bad spirit had entered, they had fainting fits and pulled strange, wild faces. (Arróspide, 1997, p.99-101).¹³

In *Conquista espiritual*, from 1639, Father Antônio Ruiz de Montoya conveys information that seems to contradict the reports made by the missionaries in the first decades of that century – that the Guaraní indigenous people had no medications and were left to die:

The indians use many remedies and medicinal herbs that nature has produced there. The stone of St. Paul is of proven assistance; so, too, are crushed garlicks, ingested as a drink; the bezoar stone and other medicinal herbs. But more homely is fire, which is used to burn the wound dusted with sulphur with a glowing knife. This remedy is known and, being helped in time, a person bitten by a snake is removed from danger. Liver of viper, when ingested as a food, we use used as a remedy (Montoya, 1985, p.25).

Brother Montoya does not, however, fail to highlight the superstitious nature of the shamanistic healing practices:

The superstitions of the witchdoctors are based on divinations made from birdsong: from which they have invented a good many fables about healing and this with tricks, sucking, for instance, the wounded parts of the sick person and the witchdoctor taking out of their mouth objects they had hidden inside, and showing that he, with his powers, had removed the thing that was causing the disease, such as a fish bone, a piece of charcoal or some such thing (Montoya, 1985, p.54).

It is nonetheless worth noting that while the healing rituals used by the shamans were repeatedly contested, the records made by the Jesuit priests, especially from the mid seventeenth to mid eighteenth century, demonstrate an increasing appropriation of American pharmacopeia in the treatment of diseases.

The irregularity of shipments of medications from Europe and the condition in which they arrived, compounded by the scarcity of doctors in the Americas¹⁴ – something the Jesuits had noted since the seventeenth century – forced them to actively pursue a better understanding of American flora and its possible uses in treating the sick:

In these lands of America with neither dispensaries nor apothecaries, I found myself forced to create a dispensary, making some with others as one can see in the treatises [which] partially relieves me of blame for it is not my task to write books with new forms of compositions and discoveries of ingredients. Foreigners and wayfarers to these parts may be sure [that] I am more moved by the charity of doing good to my brothers than the ambition to be the author of a book (Montenegro, 1790, Prólogo).¹⁵

Observation, collection and experimentation seems to have taken place alongside an intense exchange with indigenous informants, as can be seen in this passage where Montenegro notes that he has learnt the properties of the *batatilla* (*Ipomoea trifida*) from an indigenous convert:

Some Indians use it for hemorrhagic dysentery, both as a drink and for help, I know not with what degree of success; 'I only gave some credit to a good Christian called Clemente' who assured me that the remedy was good and effective and thus I doubt not that the cases of diarrhea resulting from serious indigestion or something weighing on the stomach, or else from parasites or worms, and in this case it may be effective. (Montenegro, 1790, p.139).¹⁶

In *Materia medica misionera* there are repeated references to the use of American medicinal plants in Europe and Asia, indicating not only that medications themselves were circulated, but also that there was an exchange of knowledge and therapeutic practices. This can be seen in the mention made of copaiba balsam (*Copaifera* sp), recommended for the treatment of wounds, which "is well known today and used throughout Europe, Africa and America,

with great esteem and high prices in Japan and China, as I am informed, due to its admirable qualities” (Montenegro, 1790, p.11).¹⁷ It is striking how well-informed this Jesuit brother was, especially in the mention he makes of the high price of copaiba in Japan and China, which seems to prove that in South America – in and amongst the Jesuit provinces, which were relatively geographically isolated – there was nonetheless an active circulation of information and ideas.

Alongside the recurring mention of classical authors, one passage in the work seems to prove that knowledge in the ‘art of medicine’ was indeed circulated. In it, Montenegro mentions that due to the censorship imposed by the Holy Office, “having passed eighteen years ... there came into my possession the works of Guillermo Pison and Jacobo Bonti who wrote in Brazil about many plants with names from these lands” (Montenegro, 1790, p.96).¹⁸

Like Piso, Montenegro was an assiduous observer of nature¹⁹ – the cycles of wind and water and the habits of the Amerindians and animals – which is manifest in the description he makes of the virtues of the (Brazilian) coral tree (cockspur or fireman’s cap):

and often the tiger uses this remedy to cool the ardor of its claws poisoned with great heat and moisture which, climbing it, scratches its bark deeply in the same branch leaving it like a shoe [illegible], with which it is refreshed and quickly returns to its hunting and fishing (Montenegro, 1790, p.55).²⁰

Alongside his references to classic authors of medicine such as Galen and Avicenna, Montenegro particularly mentions Dioscorides, who wrote an important work entitled *De materia medica*. Some of its editors and commentators from the sixteenth century, such as Pietro Mattioli and Andrés Laguna, also receive mention by Montenegro. This seems to explain why, upon writing about the qualities of plants, the Jesuit brother drew on explanations given by Dioscorides and Mattioli: “Four are the properties: hot, wet, cold and dry, and for each of these there are four degrees, and the substances in this book have these properties and their degrees” (Montenegro, 1790, Advertências necessárias).²¹

When it comes to the procedures to be adopted for recognizing the qualities of each plant, he adds: “The present properties of hot, wet, cold or dry can be distinguished and identified by touch, whose main instrument is the skin between the fingers, being constituted in the midst of all the excesses” (Montenegro, 1790, Advertências necessárias).²² Another important way of identifying the uses of plants was their flavor – which was directly related to the properties set forth above – an assumption, indeed, that was also observed and defended by his peer, Geronimo de Ayala, and which can be observed in *Materia medica misionera*:

Furthermore, the potential virtues of the remedies or ingredients may be known by their flavor, which [illegible] the taste of which by a blend of the four properties is yielded; from whence it emerges that the pure, simple elements have no flavor for they do not include each of them [anything] but two qualities (Montenegro, 1790, Advertências necessárias).²³

In his view, most of the plants had many potential uses depending on which part was used – flower, leaf, bark or root – or else how it was prepared, either as a broth, powder or

leaf to be chewed, to mention a few methods. Some of the plants with multiple uses were fleawort (*Plantago psyllium*), which served as a pesticide, keeping away fleas, snakes and spiders. It could be used as a compress and had a purging and abortive function:

Crushed and cooked with wine and applied to snake bites it greatly helps and cures the wounds caused by serpents and by instruments or sticks, while one ounce of rosemary leaves and pulp cooked in wine and given to drink four ounces of the broth accelerates childbirth and helps release retained menstrual blood; to cure the dripping of urine, stomach pains and jaundice the powder of the same things drunk with vinegar cure epilepsy, its juice placed at the entrance of the womb purges it (Montenegro, 1790, p.136).²⁴

Along with his descriptions of the qualities of all the plants mentioned in the treatise, Montenegro also raises some doubts about the adequacy and efficacy of some of them, noting the contraindications put forward by different authors. Besides demonstrating his profound knowledge of the matter, these observations also seem to reveal the Jesuit's critical posture towards its indiscriminate application: "Cloves, according to Pablo Cgineta [Egineta], are pungent and very bitter, hot and dry in the third degree, but according to the history of Ethiopia, written by father Manuel de Almeida, in the chronicle of Portugal, they are dry in the fourth degree" (Montenegro, 1790, p.6).²⁵ The same thing can be seen in his reference to *incienso laurel*:

I have no experience of it because I have never collected it, it is slightly bigger than the *ybabiyu* or *rayan* from the mountains; this is the one that I was able to trace from this assuredly highly medicinal tree and a friend of human nature so that here others with greater skill may in time verify its virtues little by little for experiments by the uninformed are so dangerous (Montenegro, 1790, p.27).²⁶

In Montenegro's *Materia*, there are repeated descriptions of experiments he did himself using plants, which somehow legitimized and authorized his recommendations, as demonstrated in the description made about hazelwort (*Asarum europaeum*) and its use in healing wounds:

I have them as hot in the second degree and dry in the third although they have a certain cold or temperate quality on the surface of their leaves so that in theory, applied to erysipela or erysepela wounds on the legs they repel [illegible] and, in part, resolve [them] as one can see by experience on all hot distemperate wounds and in cankers with the same distemper as I have experienced, and seen on several occasions (Montenegro, 1790, p.105).²⁷

This position is taken in the prologue of *Materia medica misionera*, where Montenegro states that the benefits of a remedy can only be assured if it is used as prescribed, because:

it will be 18 years that I am ascertaining its qualities according to its degree ... I can tell you one thing for certain, that since [illegible] I feel inclined to know and understand the virtue of the plants and with them to cure myself and my neighbors, and to them I owe my life on three occasions, from different infirmities and mortal wounds which, many authors state, were not curable (Montenegro, 1790, Prólogo).²⁸

The recommendation that recipes should be followed to the letter is repeated many times in the treatise, with the warning that any change in the measurements or the part

of the plant used would make the remedy dangerous or cause other illnesses, such as this reference to the *mbocaya* palm (*Acrocomia aculeata*):

Cooked *Mbocayi* root, an ounce or half ounce of its bark in three pints of water ... until it is used up, has a special virtue against malignant fevers, taking eight ounces of its broth when fasted with two of honey or lemon syrup or cider and furthermore it is a remedy for putrid fevers, snake and animal bites (Montenegro, 1790, p.198).²⁹

Upon describing the preparation method for an infusion of rosehip – effective for cleansing blood, purging cholera and melancholia – Montenegro notes that two ounces of the flower should be boiled in a silver or glass basin with a pint of water, after which it should be mixed. These recommendations relating to the use of a silver bowl and the length of time it should be boiled – the time taken for one Ave Maria –, are recurrent in the Jesuit brother's work.

On evidence of the continued magic and ritual nature and the convergence of knowledge

Despite the significant progress – achieved through experimentation – that can be seen in eighteenth century medical knowledge, many of the therapeutic procedures were still linked to the recommendations made by religious leaders and magic and ritual practices and medications. The treatise written by Pedro Montenegro reflects this well, exalting divine intervention in the cures, as can be seen from two passages in the prologue.³⁰ In the first, he states that “[t]here is one thing that the Greek authors and the Latins all agree, that ‘the sole inventor of medicine was immortal God and certainly this statement is founded in reason’”, and in the second he attributes the cure to God, “that Supreme Architect, builder of heavens and earth” (Montenegro, 1790, Prólogo).³¹

Another way that Montenegro exalted this aspect was through the description he made of the properties of plants encountered in the regions around the missions, such as the *aracay* (*Marlieria tomentosa*), used for hemorrhagic dysentery: “Divine Providence put it in these lands so poor in doctors and dispensaries and creates it in such abundance that men and animals may make use of it for sustenance and medicine” (Montenegro, 1790, p.44).³²

This association between plants and the Gospel is not unlike what was known as herb healing by signs – which dated back to the Renaissance and had its origins in old hermetic theories – by which, “given the existence of God, healing plants bear marks that indicate their therapeutic virtues to man. Thus, the walnut, whose form evokes the human brain, serves for the treatment of mental disturbances, and velvety plants, or with stems or roots with a hairy appearance, are good for combatting hair loss” (Le Goff, 1984, p.353).

Montenegro's work is somewhat different, in that at no point is the shape of a plant, flower or leaf associated to a therapy that resembles a particular part of the body. What one sees are plants which bring to mind certain passages from the Gospel, giving them a divine touch. This can be seen in the blossoming of the wild Madonna lily:

Its flowers are of many colors, some white, others red or scarlet, others with streaks of White and scarlet and finally others marked as if speckled with blood; all of them, except

the scarlet ones, blossom every two years, there are ones that are three and a half quarters wide, with a thick stem on top of which there is a certain long, pointed rod that ends with five lilies, and each of these opens its flower successively like funnels, each one made up of five petals; all mysterious, just as the true Madonna lily, or white lily, which represents the wounds of Our Redeemer, seems to remind every year when it blossoms of the wounds and blood of our Redemption (Montenegro, 1790, p.130).³³

Upon referring to a balm made from the aromatic plant called spikenard (*Nardostachys jatamansi*), Montenegro does not just associate it with its age-old use, because “if I am not mistaken it is with this that the elders anointed the bodies of the dead”, but also links it to the very history of Christianity, because “it is with this that Magdalene poured onto the feet of Christ, which notable authors state is this spikenard, which with time has lost the form of its composition” (Montenegro, 1790, p.128).³⁴

The presence of magic healing procedures can still be seen in the mention made of sow bread (*Cyclamen europaeum*), used to combat snake venom and purge phlegm, as well as to regulate menstrual periods: “It brings on menstruation when it is drunk or it can be applied to a woman’s skin with the root tied to her left thigh, which they say brings on a swifter delivery” (Montenegro, 1790, p.123).³⁵ As these instructions show, no matter how it was ingested, the root seemed to have the desire effect, provided it was tied to the left thigh, with the explicit recommendation that the plant not be used on pregnant women, as it could cause premature delivery or even miscarriage. Montenegro also mentions the use the indigenous peoples made of tobacco during childbirth:

The chewed root is tied to the thigh of women who cannot expel the creature dead or alive from their parts ... when the creature is so arranged that it cannot get out without being removed and this is done most effectively and quickly if the midwife chews another piece of the root and with that saliva wets the patient’s hips, while she brings the saliva of the root she chewed, putting it upright for the creature to come out (Montenegro, 1790, p.187-188).³⁶

The help provided by a midwife who would chew tobacco and wet the pregnant woman’s hips with her saliva reveals not just the continuation of practices widely adopted amongst the Amerindians – even before they were brought to live in the Jesuit missions³⁷ –, but also the role women played in the infirmaries and hospitals they kept there.³⁸

The use of amulets is also mentioned, particularly the bezoar stone, which in Montenegro’s work is referred to in at least two recipes. In one of them, the stone was to be used to treat smallpox, together with four leaves of calamite (fossilized horsetale) and two ounces of sugar, which would bring the patient out in a sweat, for which reason it was recommended that they be kept away from any draughts. In a different recipe, Montenegro mentions its use in conjunction with leaves of the *sextula maior*: “And if around two leaves of borage or bezoar stone are placed on it, as it is more sudorific it attenuates the internal pains of both the ventricle and the liver” (Montenegro, 1790, p.142).³⁹

Parts of the human body or of certain animals⁴⁰ were also widely used in eighteenth century Europe, as well as feces, urine⁴¹ and saliva. *Materia medica misionera* contains one recipe for which the head of a lamb is needed:

Take the head of an old lamb removing the body and place it to cook in a pot with four *asumbres* of water up to the middle, cooking it with the following herbs: *mansanilla*, *eneldo*, and *ruda* a handful of each cooked a half quarter of an hour and, at the end, put four ounces of *toracaã*, *bledos flancos*, *parietaria mercuriais*, *malvas*, borage, chicory and asparagus roots, a handful of each; cook, then, two handfuls of washed *fiecho*, cooked until the meat of the head comes away from the bones ... you may add hot water so that it remains [illegible] cooked ... adding to each one ounce of *ocaracu mini* oil, to be taken in the morning or afternoon as it suits the patient each day (Montenegro, 1790, p.143).⁴²

Astrology – and its influences on crops and humans – was also present in the Jesuit's work.⁴³ On several occasions Montenegro recommends that certain plants be collected in a given month of the year or phase of the moon: “to collect dragon's blood it must be the last day of the waxing moon; incisions must be made into the tree in the month of July or August, placing ... the gourd to collect from the tree what emerges in abundance” (Montenegro, 1790, p.37).⁴⁴ One plant, called *guembe* (*Philodendron laciniatum*) – recommended for the ailments arising from “food sitting in the stomach” – deserved special attention, particularly when it came to the influence the planets had on it:

It is known that this plant is procreated by the planet sun because all the parts are a little cold, as one can see [illegible] bears fruit because it is little helped and strengthened in it. There is a strong influence of Mars, being an enemy of cholera and strongly attracts the Earth with its roots for the strength it receives from the moon and for this it is so poisonous when cooked during the waxing of the moon (Montenegro, 1790, p.81).⁴⁵

The treatise also contains some unusual recipes, such as one for hair loss – treated with vervain – and ones that recommend the use of elecampane or consound (knitbone), to conserve ‘genital virtue’:

Mixing its roots [of elecampane] with those of consound ... mix half a pound of both roots and set to cook in a new clay pot in four or five pints of water, boil down to half the quantity and the best is to break these roots well and add to them an ounce of *alumbre de roca* and half of *caparrosa* and with this broth or composition bathe for eight days the whores or girls who have [illegible] succumbed to a weakness of the flesh before marrying may be certain of passing for virgins on their nuptials, especially if with well-washed pieces of cotton or wool the broth is introduced to the entrance of the vagina for a few hours in repose; in the absence of the roots of *mburucuya* those of *dictamo* serve, then *caabera mini* which grow in the hills (Montenegro, 1790, p.96).⁴⁶

A large number of plants are also recommended to combat poison, such as carqueja (*Baccharis trimera*), sorrel (*Rumex acetosa*) and *charrua* (*Eupatorium subhastatum*), whose properties had already been described by Jesuit priest Antônio Ruiz de Montoya, who observed their use by the Guarani people in the first half of the seventeenth century:

It is well known by the indians since times before their conversion, because about it wrote [illegible] Montoya, from whence I obtained its etymology which is the name of a bird called *macaguã*, which battles with the snake until it kills it, pecking it forcefully with its beak between its feathers and if it is hurt it seeks out the herb to eat which serves it as a cure and antidote against the venom of its opponent and returns to battle; if it [the snake] should fall dead, in the same moment [illegible] it promptly buries its head and thus cures its internal parts of the cold quality of its venom (Montenegro, 1790, p.172).⁴⁷

It can be seen that alongside the characteristic method and rigorous observation of Montenegro's experimentations with medicinal plants, the recipes included in *Materia medica misionera* would seem to prove an enduring strong religious overtone combined with many ritual/magic healing practices coming from catholic rituals and the European symbolic universe, as well as the existence of a refined convergence of medical knowledge and cultural practices in southern America.⁴⁸

Final considerations

The collection of and experimentation with plants from the vicinity of the colleges and missions resulted not just in the introduction of herbariums⁴⁹ and the better treatment of the sick using the dispensaries, but also the writing of treatises on native pharmacopeia. Much of this knowledge about remedies and therapeutic practices was shared in the regular correspondence the missionaries maintained amongst themselves, or via copies of catalogs and medicinal recipe books⁵⁰ that circulated amongst the missions and colleges in the Jesuit provinces of southern America and Europe – especially with the pharmaceutical knowledge from the Roman College⁵¹, not to mention the Orient (Anagnostou, 2000). Some dispensaries, such as the one at the College of San Pablo, Lima, gradually became reference centers, sending remedies (such as the Peruvian bezoar, Mexican ambrosia and quina⁵²) to establishments run by the Society of Jesus in Chile, Paraguay, Argentina, Ecuador, Panama and the Old World, bearing witness to the intense exchange of knowledge, remedies and healing practices.

Parallel to this, Europe was printing ever more books on botany, chemistry, pharmacy and medicine⁵³, giving precedence to the spread and modernization of scientific knowledge, and the better education of 'men of science'. While they may not have been "specialists in the Science of Galen and in Pharmacopeia" (Page, Flachs, 2010, p.128), the Jesuits, in view of their activities as doctors and apothecaries, certainly sought to fill gaps in their knowledge by importing books from Europe and incorporating them into their libraries, as seen in the correspondence exchanged between them and the inventories of the Society of Jesus's assets in America after they were expelled from the continent.⁵⁴ The mention made by Pedro Montenegro of Pedro Andrés Mathiolo, Andrés de Laguna and Dioscórides and the application of some of their theories, especially in the first three chapters of *Materia medica misionera*, would seem to confirm that the Jesuit brother had access to and read these medical reference works.

The analysis of *Materia medica misionera* by the Jesuit brother Pedro Montenegro gives us the chance to reconstitute the state of medical and scientific knowledge divulged and produced in the first decade of the eighteenth century in southern America. Its pages lay bare not just the difficulties the missionaries encountered in combatting the epidemics that struck the indigenous populations, but also the constant – and much-needed – experimentations that had to be done in view of the shortages they faced and the features of the environment they were operating in, leading them to collect and collate knowledge about the local wildlife and land. By the same token, the countless references Montenegro makes to classic authors of medical treatises – and to some of his peers – does not just

demonstrate his knowledge of the art of medicine, but also indicates the application and circulation of European pharmacological, medical and surgical knowledge in the Iberian colonial empires in Europe.

The work also reveals that the spaces where the Jesuits engaged in religious and educational activities in southern America – especially the colleges and missions – became a stage for the application and evaluation of European knowledge; which can be seen in the explicit manifestations of its acceptance, proof or contestation that Montenegro makes throughout the text, and also in the experimentations and cultural exchanges between healing knowledge and practices that may be found in the catalogs of medical botany, medical and surgical treatises, and medicinal recipe books written by the priests and brothers of the Society of Jesus in the first half of the eighteenth century.⁵⁵

NOTES

¹ In Portuguese America as early as the sixteenth century, the Jesuit missionaries were operating as physicians, blood-letters and surgeons, setting up dispensaries and infirmaries in the colleges in the Jesuit Province of Brazil. The shortage of professional doctors at least until the eighteenth century, the high price of drugs and remedies from Portugal and the Orient – which also deteriorated during the sea voyages and in the ports – obliged the Jesuits to turn to the natural resources offered by the land and to the healing knowledge of the indigenous people (Calainho, 2005). Likewise, the “lack of healing resources and fear of death prompted the development of medicinal recipes whose main components were always available near the people. Ingredients yielded by nature, endowed with singular properties for the healing of different infirmities, and which were widely divulged” (Ribeiro, 1997, p.70). When it came to the medical manuals that were used in Brazil in the 1700’s, there was “a considerable number of books translated into Portuguese which, after being submitted to the Royal censors, were sent to the overseas lands” with a view to “divulging standards of hygiene and healthful living ... preventing or even treating diseases that struck the people”, thereby fulfilling “the task of circulating putatively scientific medical precepts. In times when magic, religion and science went hand-in-hand, it was found to be auspicious to advise and preferably to teach the people” (Marques, 2004).

² The annual letters that the Jesuit priests sent to their superiors tell of the “intense work they engaged in at the infirmaries and dispensaries annexed to the Colleges in the different regions of America. At times of epidemics, the College of Córdoba was turned over to the sick, with the professors of philosophy and theology abandoning their educational work and setting about helping, cleaning, washing and healing the sick.” In the missions in the regions of the Jesuit Province of Paraguay, the healing procedures included everything “from the preparation of broths, the invocation of the virgin, repentance for sins committed... Many of the species used and recommended continued to be used in the following centuries, and some even came to be known and used in Europe, while many were planted and grown even in the gardens of houses” (Page; Flachs, 2010, p.117-118).

³ Reflections about the many activities undertaken by the members of the Society of Jesus have always divided the opinions of historians. For over four centuries, the Society has been seen in a negative light, associated with opposition to innovations in the field of modern science. This historiographic tradition has changed significantly since the 1990’s in light of a number of studies which, based on documents accessed in the archives of the Society and the Inquisition in Rome, highlight the undeniable role the Jesuits played in the intellectual history of the Renaissance and the beginnings of the modern era.

⁴ There was a catalog of books that could be sold and sent to the West Indies, which listed works such as *Disputaciones de Medicina*, by Garcia; *De Corpore humana*, by Valverde; *Cirurgía*, by Redondo; *De morbo galico*, by Duarte Madeira; *Cirurgía*, by Borbon; *Promptuario*, by Remigio; and *Promptuario*, by Salazar. The Córdoba University library, according to this author, contained works such as *Tesoro de Medicina*, by Egidio de Villalón; *Cirurgía Universal*, by Calvo; *El Tratado de todas las enfermedades*, by Francisco Diaz; *Tratado de Medicina*, by Juan Amato; and *Los Principios de Cirugía*, by Ayala. Meanwhile, the library of the Mendoza College had a copy of *Tratado de Cirugía*, by Juan Tabault, and a 1750 edition of *Obras médico-quirúrgicas*, by Fouquet. (Furlong, 1944, p.50-57; p.110-118). According to Carlos Page, the 1757 *Index Librorum* from the College of Paraguay reveals that its library contained works such as *Arte de Botica*, by

Alphonsus Fubera; *Tratado de Botica*, by Luis de Oviedo; *De Re Medica*, by Pachus Aigiteta; *Opera Medica*, by Donato Antonio Altomare; *Fructus Medicina* and *Tractatus Medicina*, by Joannes Amatus; *Thesaurus Medico*, by Adrianus Amynsicht; and *Scientia media defensata*, by Francisco Annatus (Page; Flachs, 2010, p.129).

⁵ It is important to be aware of “the effort the Jesuits put into collecting and systematizing medical knowledge, demonstrating how this initiative was based on the references to scholarly learning at the time, with studies of the properties of plants and animals being based on references from Natural History and Hippocratic Medicine” (Gesteira, 2006, p.1).

⁶ *Materia medica misionera*, by Jesuit brother Pedro Montenegro, is a weighty thesaurus of native medicinal plants from the Americas, described in detail for their therapeutic properties, and a list of medicinal recipes describing their use. According to Heloísa Gesteira (2006, p.5), the work served “as a guide to be used in places far removed from the cities, such as the missionaries in the missions, for we know that the colleges in the colonial urban centers had their own dispensaries”.

⁷ The Provincial Catalog from 1703 states that Br. Montenegro “había hecho los últimos votos el 25 de abril de 1703, que se allaba en las Misiones del Rio Paraná, que sus fuerzas físicas eran débiles y su oficio era el de cirujano (*Chirurgus*)”. Considering the training that Pedro Montenegro received in Spain and the healing procedures used by doctors and surgeons at the time – which included blood-letting, the ingestion of medicinal herbs, massage, cupping, and compresses of a variety of ingredients and poultices, as well as amputations and corrections of crooked bones – and the profession attributed to him in the catalog – that of a surgeon – it is possible to deduce what activities he would perform in the Jesuit missions in America. In this and the other citations of texts published in languages other than English, the translation is free.

⁸ The work contains five chapters, the first three being devoted to the nomenclature and properties of plants and guidance on the right time for collecting them and their qualities. The fourth chapter gives a detailed presentation of herbs, roots and barks that should be administered for given ailments. According to Furlong (1962, p.611), the fifth part, entitled “Other curiosities and useful recipes”, was not written by Montenegro.

⁹ The book is dedicated to “the serene Queen of the angels saint Mary and Our Lady of Pain” and at several points in the prologue, Montenegro states that God is the true “Creator of Medicine”, the “Great Architect” known by the “great Greek and Latin scholars”.

¹⁰ There is one copy of Pedro Montenegro’s text at the National Library of Madrid, and a digital version of it can also be consulted at the Virtual Library of Paraguay (Biblioteca Virtual del Paraguay). There is also an Argentine publication entitled *Materia medica misionera*, which was edited by Revista de la Biblioteca Nacional, Buenos Aires. Recently, a manuscript at the National Library in Rio de Janeiro called *Curiosidad: un libro de medicina escrito por los jesuitas en las misiones del Paraguai*, believed to be dated 1580, was analyzed by Heloísa Gesteira. Upon noting that the two texts contained “identical parts”, the researcher initially raised “the hypothesis that works of this kind were shared by the missionaries” and also that the document at the National Library in Rio de Janeiro may be “a reproduction of the text by Montenegro” (Gesteira, 2006, p.2-3).

¹¹ In the manuscript copy we consulted at IAP there is a brief annotation made by Bartolomeu Melià dated 1986: “This manuscript seems to be from the time and was written by someone who did not master the Spanish language, and may therefore have been an Amerindian from the mission”. This observation seems to confirm the hypothesis put forward by Heloísa Gesteira that these texts were copied (by the missionaries themselves or else by indigenous scribes), distributed and shared by the Jesuits in different regions in which the Society of Jesus was present (Gesteira, 2006, p.5).

¹² “Tambien con los pocos remedios que aca ay procuramos curarlos por que ellos no tienen medicinas ni hacen remedios sino dexassen morir. El año pasado dio una enfermedad de catarro de que enfermo caso todo el pueblo y el padre Juan de Salas les hiço un jarave con que sanaron casi todos aunque algunos murieron.”

¹³ “Que hacen cosas que espantan y no pueden ser sino por arte del demonio ... usan de todo el aparato solemne de gesticulaciones; hablan con el demonio por medio de la yerba ... cogen las brasas encendidas en las manos sin quemarse y se las comen a bocados, como si fuera cosa muy gustosa y comestible ... hacía abrir un agujero en el techo, por donde había de entrar el mal espíritu, le daban unos desmayos y hacía fieros visajes y meneos.”

¹⁴ Throughout the seventeenth century the Jesuits in Hispanic America, “with more goodwill than good science, helped to alleviate the sick. They were not doctors, nor did they understand medicine, yet they

acted as healers in the early days of the missions" (Furlong, 1962, p. 604). Some, such as Fr. Cristóbal Altamirano, even organized a dispensary that served the other missions; others, like Br. Diego Bassuari, wrote books on medicine based on medicinal recipe books. Furthermore, many of the missionaries who worked in southern America had joined the Society relatively late in life, which allows one to suppose that some of them may have studied medicine in Europe. If in the 1600's there were no doctors acting in the missions, "we cannot say the same thing when it comes to the eighteenth century, since there were quite a number of men of science and technical skill who took care of health in the missions" (Furlong, 1962, p.607).

¹⁵ "En estas tierras de la America sin Botica ni boticarios me vi desaviado con ellas a ser autor de Botica confeccionando unas con otras cual se puede ver en sus tratados [illegible] lo cual te pido q.^e sien algo [illegible] yerro me disculpa en parte porque no siendo de mi estado el escribir libros con nuevo modo de composiciones, y descubrimiento de extraños y peregrinos simples en estas partes puedes estar cierto me mueve mas la caridad de hacer bien a mis hermanos q.e la ambición de autor de un libro."

¹⁶ "Ussanla algunos Indios para camaras de sangre assi per bebidas como per ayudas, nose con que buenos susezos, o malos 'solo di algún crédito a un buen christiano llamado Clemente' ... que me aseguro era buena y eficaz medicina y assi no dudo seran las camaras per una de dos causas opor indigestion grave o cosa asentada en el estomago, o por lombrices, o por gujanos que en estas causas le hallo puede ser eficaz."

¹⁷ "es oy mui conocido y usado por toda la Europa, Africa y America, y con grande estima y subido precio en el Japon y China segun estoi informado a causa de sus admirables virtudes."

¹⁸ "pasados dies y ocho años... llego a mis manos las obras de Guillermo Pison, y Jacobo Bonti q.^e escrevieron en el Bracil (ñ) en varias Plantas con los nombres de estas tierras."

¹⁹ But not just knowledge about the healing properties offered by nature – especially the American flora in the vicinity of the missions. In the eighteenth century, the missionaries continued to observe the instructions passed down by their superior, Diego de Torres Bollo, in 1610, seeking to establish the missions far from the harmful humidity of the swamps, so that they could enjoy purer air, be free from mosquitos, toads and snakes, and have good water to drink, wash and bathe in, building them near the woods, facing southwards, to take advantage of the cool winds that were so necessary in such hot lands.

²⁰ "y ese remedio usa muchas veces al tigre para refrigerar el ardor de sus uñas embenenadas de gran calor y humedad el qual subiendo a el arana su cortesa profundamente hasta el mismo pala dejandola como zapato [ilegível], con lo qual se refresca y queda muy ligero para sus caserías y pescas".

²¹ "Quatro son las qualidades calor, humedad, frialdad e sequedad, en cada una de estas se cuentan quatro grados, y los simples de q.^e se trata en este libro tienen de estas qualidades y sus grados en ellas."

²² "Las qualidades actuales de calor, humedad, frialdad o sequedad, se discernem, o conocen por el tacto, cujo principal instrumento es el cuerecico interior de los dedos siendo en medio de todos los excessos constituído".

²³ "Conocen se también las virtudes potenciales de las medicinas o simples por los sabores, que [ilegível] el gusto los cuales por una mescla delas quatro cualidades primas son engendradas; de donde nacen que a los elementos puros, y simplísimos ningún sabor por no costar [sic] cada uno de ellos sino de dos cualidades".

²⁴ "Machacada e cosida con bino aplicadas alas mordeduras delas serpientes los socorre y cura las heridas con admiracion asside serpientes como de instrumentos o palos assi como el romero de sus flores ojas y cogollos una onsa cosidas en bino y dado a beber quatro onsas de su cosim.¹⁰ acelera el parto y hace bajar el mestruo retenido; p.^a sanar el estilicidido dela orina, los torcijones del biente y la ytericia bebidas con binagre el polvo de las mismas cojas sanan la gota coral, su sumo metido en la boca dela matris purgala."

²⁵ "Son los clavos segun Pablo Cgineta [Egineta] odoriferos agudos, y con bastante amargor, calientes y secos en el tercero grad, pero segun la historia de Ethiopia escrita por el padre Manuelte, en la cronica de Portugal, es seco en el cuarto grado."

²⁶ "no tengo esperiencia de ella por no haverla sacado, es poco mayor dela del ybabiyo ao rayan montaña; esta es la que he podido rastrear de este arbol cierto muy medicinal y amigo dela naturaleza humana para que por aqui pudan otros de mejor ingenio ir con el tiempo aberiguando sus virtudes poco a poco por ser tan peligrosas las esperiencias de los simples."

²⁷ "tengo las por calientes en el segundo grado y secos en el tercero aunq.e halla en la superficial y de sus ojas sierta qualidad fria o templada de suerte que al principio aplicadas alas ericpelas o llagas er[x]icipe

latosas las delas piernas repelen en [ilegível] y en parte resuelben como se puede ber por la esperiencia en toda llaga de destemplansa caliente y en las canserosas con dicha destemplansa como lo tengo experimentado, y aberiguado barias veces.”

²⁸ “va para 18 años q.^e estoi aberiguando sus qualidades segun su graduacion ... te puedo decir como cosa sierta que desde [ilegível] acuerdo tener uso de rason me siento inclinado [ilegível] de conocer y saver la virtud delas plantas y curar com elas a mi y a mis proximos, y a ellas devo la vida por tres veses, q.^e de varias enfermedades y heridas mortales de necessidad; segun varios Autores afirman no ser curables.”

²⁹ “La raiz del Mbocayi echa cosim.¹⁰ una onza de ella o media de sus cortesas’ en tres quartillos de agua ... hasta mermar, el uno tiene virtud especial contra las fiebres malignas tomando de su cosim.¹⁰ en ayunas ocho onzas con dos de mieles de abejas o xarave de limon o sidra, y assi mismo es remedio alas fiebres putridas, y las mordeduras de vivoras y animalejos.”

³⁰ Neither medicine nor chemical pharmacy were rational in the seventeenth century, for “Medicine puts faith in the curative virtues of certain objects that are no more than amulets” (Leal; Ferreira, 2007, p.89-90), such as: hedgehog jaw, used to relieve toothache; rough black amber for sight; seahorse to prevent melancholy; and turtle shell for longevity and fertility. It is very likely that at this time alchemists’ preparations, experiments and pharmaceutical preparations were concocted in secret because of the danger of being accused of heresy by the Church.

³¹ “Tiene se por cosa sierta assi entre los autores Griegos como entre los latinos que el imbentor dela medicina fue solo Dios immortal y sierto va fundada en rason la tal aberiguacion” and attributes the cure to God, “aquel Sumo Architecto fabricador de cielos e tierra.”

³² Referring to *aracay*, Montenegro states: “Pusso la Divina Providencia en estas tierras tan pobres de médicos y boticas, y la cria en tanta abundancia que hombres e animales se valen de ella para sustento y medicina.”

³³ “son barias, en color sus flores unas blancas otras coloradas o encarnadas otras jaspeadas de Blanco y encarnado y enfin otras diciplinadas como salpicadas de sangre todas ellas menos las encarnadas echan ojas dedos endos y anoho, y tres quartas y media de largo con un talo grueso y alto de abana en sima del qual en sierto surrancillo largo y puntiagudo se ensierran sinco Azucenas, el qual abierto se ba cada una de ellas abriendo p.^t sucesion su flor a modo de embudo cada una compuesta de sinco ojas, todo ello misteriojo, assi como la verdadera Azucena o lirio blanco, como representacion de las llagas de Nro. Redemptor que parece que quiere recordarnos esta planta todos los años al salir su flor la memoria de las llagas y sangre de nn.â Redempcion.”

³⁴ Upon referring to a balsam made of an aromatic plant called spikenard, Montenegro does not just associate it to an age-old use, because “si mal no me engano es aquel de los antiguos conq.^e ungiun los cuerpos muertos”, but also links it to the very history of Christianity, for “el que la Magdalena derramó a los pies de Christo que segun grandes autores afirman es este nno. nardo, sino que con el tiempo se perdio la noticia de su composission.”

³⁵ Referring to the use of sow bread to regulate menstrual bleeding: “Provoca el menstuo a ora se beba o se apliq.^e a la natura dela muger atada su rais al muslo izquierdo dicen acelera el parto.”

³⁶ “La raiz del cox[r]o mascando decha un pedacito cano una pulpada de ancho la muger que no puede echar la criatura muerta o biva o las pares, tragando el sumo de ella echa luego todo lo tenido sino es que este tan atrabesada la criatura que no pueda salir sin que la revuelvan, y esto hace con mayor eficacia y prestesa si la partera masca otro pedaso de rais y con aq.^ella saliva le da uncion en los y jares y quadriles ala paciente al mismo tpô. q.^e ella traga la saliva de la rais que ella masco poniendola enpie para q.^e salga la criatura.”

³⁷ The indigenous midwives were recognized for their skill in repositioning the unborn baby in the final days of pregnancy, making it come out head-first and not feet-first. The *káiová* women tell that in these cases three midwives were needed and that when the mother-to-be “had larger babies generally the labor took place in a different house built for this purpose and with a source of fire” (Chamorro, 2009, p.267).

³⁸ The annual letter of 1635-1637 contains references to the installation of infirmaries in the missions and colleges during the epidemics, and of the sick there being tended by the Amerindians themselves – who were in charge of sweeping the college rooms and cleaning the surgical instruments – and by those who were members of the priesthood and brethren at the missions.

³⁹ “I si sele echan unas dos ojas de boraja y piedra bezoar es mas sudorifica y mitiga los dolores internos assi del ventrículo como del higado.”

⁴⁰ As in Europe, at the colleges and missions of the Society of Jesus in America, medications of animal origin were produced from dogs, pigeons, chickens, goats and sheep, which were bred in these spaces (Anagnostou, 2000).

⁴¹ It should be borne in mind that “the cures, whether for diseases or supposed sorcery, were made with a number of combinations of ingredients and procedures, which could be ingested or rubbed on the body: substances of animal and vegetable origin; various foodstuffs and liquids; excrement and bodily fluids; hairs, nails and cadavers. The same remedies were used to fight natural diseases and supposed witchcraft, so there was no clear dividing line between the natural and supernatural world” (Calainho, 2007, p.64-67). Alongside their therapeutic use, it is worth remembering that observing urine, known as the patients’ waters, was at the time one of the main sources of diagnosis.

⁴² “Tomarás una cabeza de carnero biejo quitando el cuerpo por la a cocer en una olla que tenga quatro asumbres de agua y em estando a medio cocer leiras echando las yerbas siguientes; mansanilla, eneldo, y ruda de cada uno un puñado cuesan medio quarto de hora y al cabo del ponle toracañ quatro onsas bledos flancos, parietaria mercuriales, malvas, raices de borrajas y de achicorias y de esparragos un puñado de cada una [ã] fiecho labado dos puñados cuesan hasta que la carne de la cabeza se despegue de los guesos y si fuere tan dura que apuer mas de mitad del agua le podras añadir de otra agua caliente de suerte q.º quedandos [ilegível] cosim.¹⁰ del qual se achan ayudas añadiendo a cada una una onsa de aceite ocaracu mini tomance de mañana o por la tarde como mejor se hallase el paciente cada dia una.”

⁴³ In England in the early 1500s, “It was generally accepted that the four elements that constituted the sub-lunar region – earth, air, fire and water – were maintained in their state of constant flux by the movement of the celestial bodies. The different planets transmitted different quantities of the four physiological properties of hot, cold, dry, wet. Astrology was, thus, not so much a separate discipline as an aspect of an image of the world accepted by everyone. It was needed to understand physiology and therefore medicine” (Thomas, 1991, p.238). In the 1700s, much of this vision had already been lost, but the aspects cited above by Thomas were still present in the most widely accepted theoretical conception of medicine – the Hippocratic tradition – which proposed “the influence of the airs and places on the development of the fetus, the development of the humors, the origins of the passions, the forms of language and the nature of nations” (Corbin, 1987, p.22) and is manifested in the text by Pedro Montenegro.

⁴⁴ “y así para sacar la sangre de drago es nessesario q.º es la creciente de luna a lo último de ella hagan talla al arbol en el mes de Julio o Agosto poniendo un mate o calabaso p.º q.º la recoja arimado ala ficion del arbol q.º lada en abundancia.”

⁴⁵ “esta planta se conoce ser procreada del planeta sol, pues todas as partas lo estan disiendo como se be q.e en partes algo frias [ilegível] fructifica por ser poco ayudada y fortalecida del. tiene grandes influencias de Marte por que es enemiga a los colericos. y atrae mucho dela Tierra con sus raises p.º lo mucho que ella recibe dela luna y p.º esso es tan benenojo cogida en creciente de luna.”

⁴⁶ “mesclada su rais con la dela consuelda mayor indica que aqui doi domi diligencia descubierta machacadas las dos raises de cada una media libra y puesta a cocer en ollanue de varro sin estrenar en quatro quartillos o sinco de agua y que merme la mitad y lo mejor es quebrantar mui bien estas raices y colado añodirle alumbre de roca una onsa y media caparrosa media onsa y con esto cosim.¹⁰ o compocion labarce por espacio de ocho dias las mererices o masuelas q.º [ilegível] caido en flaqueza de carne antes de ser casadas pueden estar seguras pasan por virgines en los desposorios maiorm.¹⁶ si con mecha de algodón o lana bien labada intrudgeren el cosim.¹⁰ en la voca dela matris p.º alguna oras al acostarce afulta de las raices del mburucuya sirven las del dictamo segundo caabera mini que digo que nace por las lomas.”

⁴⁷ “es mui conocida de los Indios desde su infidelidad pues escribe de ella el [unknown symbol] Montoya de donde e sacado su etimologia que es nombre de un pájaro llamado macaguã, el qual haciendo arnes de mui la pelea con la vivora hasta matarla dando les fuertes picotazos p.º entre las plumas y sintiendose herido acude a comer de la yerba la cual le sirve de cura y antidoto contra la maliciosa ponsoña de su contrario y buelbe a la pelea si acaso do quiede de todo muerta y al instante se [illegible]ga entera sin reservar cabeza ni cola con que se [illegible], y acaba de curar lo interno de sus entrañas de la venenosa calidad fria de su veneno”.

⁴⁸ The inventory of the dispensary at Córdoba College – undertaken in February 1768, soon after the expulsion of the Society of Jesus from the territories ruled by Spain – seems to confirm this statement, listing as it does wines, ointments, oils, essences, balms, dyes, salts, powders, roots, flowers and waters. Alongside preparations based on nitric acid and ammonia, such as the wines and waters, such as infusions

of lemon balm and cinnamon, there were powders extracted from the *ipecacuanha*, an American medicinal plant (Page; Flachs, 2010, p.123).

⁴⁹ Pedro Arata (1898) makes reference to the herbariums of medicinal plants existing in the Jesuit missions in his 1898 article, "Los herbarios de las misiones de Paraguay". In them, alongside native American plants, there were also medicinal plants from Europe, including rosemary, peppermint, cumin, chamomile and absinth, as can be seen in *Tratado breve de medicina* by Fr. Segismund Asperger SJ.

⁵⁰ Aware of the importance of such studies, the Jesuits did not fail to include a very important recommendation for the copies they produced: *¡Secreto de los jesuitas!* [Secret of the Jesuits] (Arata, 1898, p.430-431). The priests were careful to "keep the secret as something from the sphere of divinity, religion, not of men, something that had to be kept confidential; otherwise, the medicines would lose their 'esteem'. There would be a certain breaking of the 'enchantment' or mystery that surrounded them. The secret medicines were prime combinations of magic, religion and science, and at the height of the Age of Enlightenment" (Marques, 2003, p.164, 179, 186).

⁵¹ It is known that Roman Theriac – a medicine understood to be a panacea and for this reason used against all kinds of poison – was a specialty of the Roman College – distributed in central Europe – and was so sought-after and valuable that its recipe was kept secret. The inventories of the dispensaries at the missions in colonial America make mention of a variation of European Theriac. More than likely, experiments were made in America because of the scarcity and unreliability of the deliveries of European Theriac.

⁵² Mexican ambrosia (*Chenopodium ambrosioides*), also known as wormseed, wormwood, *erva de Santa Maria*, Jesuit tea, and Mexican tea, is used against worms, and also to relieve stomach cramps, reduce gases, encourage the appetite, improve digestion, cure insect bites, bronchitis and ulcers. Quinine is extracted from quina, which is an antiseptic, anti-thermal remedy used as a syrup, powder or infusion, and the oldest medication used to fight malaria and fevers. Also known as *corteza peruana* and *cinchona*, quina was already used by native Americans, and its use became known in Europe in the 1600's, being traded by Spanish Jesuits.

⁵³ Many of these works resulted from observations by travelers and/or scientists "sent by governments or scientific institutions from the Old World" or who "on their own initiative crossed the sea to reach the New attracted by the inexhaustible matter of their flora" (Page, Flachs, 2010, p.127).

⁵⁴ In eighteenth century Hispanic America, the "different texts on medical knowledge published in Europe were present and several classical authors came to be known and read". Yet sadly the inventories of the dispensaries of the colleges of Paraguay and Córdoba – made after the Jesuits were expelled – seem to indicate a lack of precision and a 'lack of intelligence' on the part of those responsible for doing them (the inventory makers limited themselves to generic information about the materials, size and estimated value of the works), and the "dispersion that existing books on medicine and pharmacopeia suffered" in these dispensaries, which was partially overcome by the inventory made by Fr. Carlos Leonhardt SJ in the early 1900s (Page, Flachs, 2010, p.128, 135).

⁵⁵ In a recent review of *Science in the Spanish and Portuguese Empires: 1500-1800* (edited by Daniela Bleichmar and published in 2009 by Stanford University Press), Iris Kantor makes a statement that corroborates the conclusions of our study. She draws attention to the effects of the appropriation of "negative images ... by the historiography of decadence, (... written from both a liberal and a Marxist point of view) which, in its turn, attributed to the Inquisitorial censorship, Catholicism and the Jesuits the main epistemological obstacles to the development of scientific thought in the countries and regions subject to Iberian colonization." She goes on to state that "the studies brought together in this collection seek to definitively overcome the dichotomy between scientific practice and Catholic culture, demonstrating that in the political and theological context of the natural world a baroque scientific sensibility that took divine providence into account, was averse to experimentation, and had a propensity for theoretical eclecticism did not represent a genuine impediment to the formulation of universal explanatory models" (Kantor, 2010, p.295-296).

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