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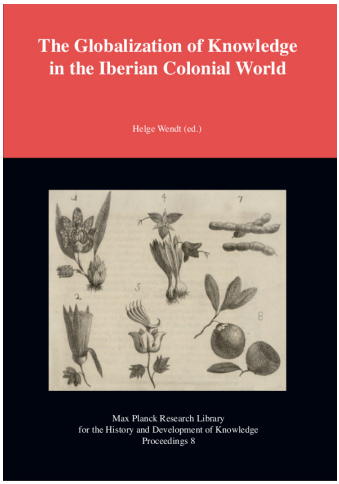

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Chapter 7
Women's Medicine in the *Cuatro Libros de la Naturaleza* of Francisco Ximénez (1615): Interchanges and Displacements

Angélica Morales Sarabia

In the late eighteenth and early nineteenth centuries, Mexican physicians, naturalists and pharmacists regarded Francisco Hernández (1517?–1587) as one of the preferred sources, when it came to the study of indigenous *materia medica* and botany. There were two key texts from the corpus of Hernández. The first is the *Cuatro libros de la naturaleza* done in New Spain by Francisco Ximénez (1615); this work is based on a copy of a selection from the Latin text of Hernández prepared by Antonio Nardo Recchi, of which the Accademia dei Lincei in Rome produced a different edition in the *Rerum medicarum Novae Hispaniae* (1651). The second is the edition of three of the five volumes of Hernández' *Historia natural de la Nueva España* which Casimiro Gómez Ortega managed to prepare in 1790, thanks to the discovery of the original version in the Colegio Imperial by Juan Bautista Muñoz at the end of the eighteenth century (Álvarez Peláez and Fernández González 1998, 44). The latter is known as the "Madrid edition" to distinguish it from the "Rome edition." Other texts consulted at the time, which referred to or incorporated material from Hernández, were *Verdadera medicina, cirugia y astrologia* (1607) by Ioan de Barrios, and *Problemas y secretos maravillosos de las Indias* (1591) by Juan de Cárdenas (2003 [1591], facsimile).

The preponderant place of Hernández in natural science and medicine was due to the wealth of information on medicinal plants described in his work, which it should be noted, was not superseded by any other scientific enterprise until the Real Expedición Botánica to New Spain (1787–1803) by Martin Sessé (1751–1808) and José Mariano Mociño's (1757–1820);[1] moreover, it had an almost immediate impact on the global botanical classification.[2] Other texts circulated that

[1] Francisco Hernández managed to collect information on more than 3,000 plants, 500 animals and 35 minerals, besides numerous drawings and information about each of the exemplars he collected, Maldonado and Puig-Samper (2001, 38).

[2] The aim of this expedition was to save some of the materials of Francisco Hernández that had remained in New Spain, as well as to compile an inventory of the flora of New Spain. The precise number of plants collected is not known, although the impact was almost immediate and was reflected in various herbals, plant collections, drawings and descriptions by the members of the expedition. This

did not go into print until the nineteenth or twentieth centuries and whose influence therefore was less or came later than that of Hernández. The latter includes Fray Bernardino de Sahagún's *Historia general de las cosas de Nueva España*, one of the major sources on native, especially Náhuatl, medicine; and the *Libellus de Medicinalibus Indorum Herbis* by Martín de la Cruz that, although compiled in 1552, was not printed until 1932.[3]

The Hernandine corpus was the basis for the research agenda on *materia medica* of the Museo Nacional, the Escuela Nacional de Medicina and the Instituto Médico Nacional, to mention only a few of the late nineteenth-century scientific institutions of Mexico. They augmented the information collected by Hernández on purgatives, anti-malarial plants, astringents, soporific or anodyne plants and others. The nineteenth-century scientists established a continuum between the past and the present that enabled them to "restore" that inexorably lost past. The gains were double: they obtained legitimacy in the process of constructing their scientific genealogy; and they continued to apply an experimental empiricism to the study of medicinal plants.

The present contribution focuses on the medicinal plants listed in the *Cuatro libros de la naturaleza* that were used in particular to treat women's ailments. Unlike other texts on medicine or *materia medica* that were printed in New Spain in the second half of the sixteenth and the first half of the seventeenth century, Ximénez's translation provides invaluable information on women's ailments and the measures adopted to treat them. Moreover, it is possible to detect a residue of a wider culture concerning the body, pain and beauty of women in New Spain. Though the argument would exceed the bounds of the present contribution, my hypothesis is that the therapeutic arsenal deployed to deal with women's medical problems registered in the Hernandine corpus in the sixteenth century decreased in the publications on *materia medica* of the following centuries, except for certain plants that managed to transcend time and medical paradigms such as cihuapatli (tree daisy), which continued to be used for centuries by physicians and midwives, to induce uterine contracions.[4]

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was an obstacle to the proper publication of its results as a whole. Nevertheless, in one of the most important studies of the iconographic collections of this expedition, McVaugh gives a total of 7,500 names of plants connected with the expedition. Fernández de Celaya, Paloma Blanco, "Los resultados botánicos: manuscritos y herbarios" Maldonado and Puig-Samper (2001, 55).

[3]The works of Hernández, Sahagún and de la Cruz cover a total of 4,051 plants, only 1,647 of which are botanically recognized today. It should be noted, however, that the total number of plants may vary as these figures do not take into account botanical species and there are many repetitions among the three authors, Castillo, Quijano, and Reyes Chilpa (2012, 48).

[4]The Instituto Médico Nacional (1888–1915) carried out research on *cihuaptl* for several years and published various theses in pharmacy and medicine on this plant in the pages of its review, including the following: Altamirano (1895); Reza (1887); Cota (1897 [1883]); García Peña (1897). On another plant used to induce parturition, see Caderón (1896, 36–42).

Women's Medicine in *Cuatro Libros de la Naturaleza* (1615)

Cuatro libros de la naturaleza contains four books divided into a total of nine parts, a division inspired by Theophrastus. In Europe of the sixteenth and seventeenth centuries, medical texts were compendia of prescriptions bearing on medical and surgical knowledge. They listed the commonest ailments and the therapies applied to combat or cure them, often accompanied by a description of an antidote describing how to prepare, dose and apply the simples and compounds of animal, vegetable or mineral extraction (Pardo-Tomás 2000, 25–40).

Like a herbal, Ximénez's work opens with the description of the physical characteristics of the plants and their medicinal properties, their forms of preparation and their whereabouts. The first book is devoted to trees and shrubs, divided into three parts: "On aromatics," "On trees," and "On shrubs and their fruit." The second book has two parts: "Sharp and mordant herbs" and "Bitter herbs." Book III also contains two parts: "Saline and sweet herbs" and "Acidic, sour and insipid herbs." Book IV contains "Animals" and "Minerals." The work also contains two alphabetical indices: one of the medicinal simples, and one of the cures for all types of ailments and their causes.

One of the main differences from other works on *materia medica* of its time is that *Cuatro libros de la naturaleza* did not set out to revise what had been said in the texts of classical antiquity in the light of humanist philosophy (Grafton 1995, 161–162), but to understand a different medical and therapeutic tradition, even if this knowledge was later accommodated within the precepts of a renewed Galenism. The result, however, of this extraordinary undertaking went beyond the aims of the author and his informants. Francisco Hernández was sent to New Spain to survey resources that could be useful for medical purposes. This was what Philip II stipulated when he gave him the task of describing the natural history of the new American lands with an emphasis on the medicinal plants. Hernández was also required to investigate the type of physicians, their knowledge and the ways in which they used medicinal plants in the New World. Hernández was to pay particular attention to those medicines that could be put to good use in Spain (Álvarez Peláez and Fernández González 1998, 26).

If the plants of the Old and New Worlds were considered the most valuable gift of nature, they were also one of the principal resources to encourage the broadening of markets at a time of expansion of the colonial empires in the following centuries (Pardo-Tomás 2002, 77–126). According to Antonio Barrera-Osorio (2006), it was the last resort economic and political interests that clearly defined the type of objectives and instruments in the production of knowledge in the sixteenth century.

As José María López Piñero and José Pardo-Tomás have shown, there are few analyses of *Cuatro libros de la naturaleza* in spite of its being one of the Hernandine texts that enjoyed a wide circulation. Among the formal differences between the "Madrid" and the "Rome" editions that they discuss is the difference in the organization of the text. Ximénez does not contain the prolegomena that Recchi included, and which they consider to have no connection with the text of Hernández. The first part of Ximénez's first book, on the other hand, corresponds exactly to the second book of the Roman edition, but this is not true of the succeeding books, which reflect both additions and subtractions on Ximénez's part. They also pointed out the important advantages of Ximénez's translation vis-à-vis the Roman edition (López Piñero and Pardo-Tomás 1994, 121–126). Although Ximénez himself had not received any academic training, he was immersed in the same setting that Hernández had shared: the Hospital de Santa Cruz in Huaxtepec (Oaxtepec, Morelos). This enabled him to corroborate, enrich or contradict the original information collected by Hernández. Ximénez's hand can be traced in the additions to the synonyms of plants in Spanish, Náhuatl, Otomi or Tarasco, as well as in the incorporation of prescriptions.

It can be added that Ximénez incorporated some typographic insets in the first and second books that were intended to alert, encourage or discourage the reader from using certain plants. It is interesting that these insets refer to plants that produced a strong effect on their users. The use of these insets is not completely systematic, so it is unclear whether they are the result of problems directly connected with the printed process carried out in the house of the widow of Diego López de Dávalos,[5] or whether they were used only for those plants that were considered the most important. These insets appear to be particularly important in connection with zapote blanco, cacao, tobacco and ololiuhqui (Sarabia 2014, 47–74), or to indicate the different effects of plants like pinahuizxihuitl on indigenous people and Spaniards. Unfortunately we lack more information to settle this question, but it is certain that these fourteen insets are proof of the expertise that Ximénez acquired in the dispensary of the hospital in Huaxtepec.

The Importance of a Text on *Materia Medica* for the Discourse on Women

The publication of *Cuatro libros de la naturaleza* took place a little less than a hundred years after the conquest of México, Tenochtitlán. At that time, European fruits and vegetables that had been acclimatized by natives and Spaniards were on sale in the city markets (Gruzinski 2010, 40). Exchanges, barter and dishonest trade took place in the markets, as Alonso de Molina (1514–1585) informs

[5] Diego López de Dávalos was an important printer and editor of text form New Spain in the seventeenth century. After his death in 1613, his wife continued his work.

us in his *Confesionario mayor en la lengua mexicana y castellana* (1569). The merchants took advantage of the "Otomi" *indios*, children and anyone else they could trick. It was common practice to dye cacao green to make it look much riper. They would also adulterate good cacao with avocado pits, or mix styrax balsam with leaves or wooden "horseshoes" to increase its volume (Molina 1569, 37r). In the meantime, what happened to women's therapeutic resources? How can we unearth the bodies of knowledge that were produced by women, buried within disciplinary traditions such as natural history or the medical practices of the past?

Londa Schiebinger has found that a large number of the eighteenth century studies of natural history and medicine were based on the imperial expeditionary enterprises in America, the transformations of systems of botanical classification, or the role of the commercial exploitation of American green gold (quinine, coffee, tobacco, sugar, indigo, cassia, gum, aloe, sassafras root or bark from Brazil, balsam from Peru, ipecacuana jalapa) (Schiebinger 2004, 8). Of course, these studies have dealt with the political and economic expansion of the European powers on a world scale, prioritizing the theme of the circulation and appropriation of knowledge, but there have been few studies of other historical aspects that necessarily refer to other spaces and practices in the process of understanding the natural world.

The Hernandine corpus has made it possible to write various chapters of natural history and its imprint on the European world. In Mexican historiography, they have been essential sources for native botany and *materia medica* and for the analysis of the processes of exchange between the local and the European cultures (syncretism and/ or acculturation). They continue to be an important source in ethnobotanical studies. And, although they have been used to write several chapters on women, an analysis that takes the work as a whole has yet to be conducted.

Cuatro libros de la naturaleza tells us how it was read and about the spaces in which it circulated. It was primarily a prescriptive reference manual for use in the missions, but also to help the sick in the villages and settlements far from medical aid. It was by no means aimed exclusively at a female public, even less at those native women who had preserved their therapeutic knowledge by means of oral tradition. *Cuatro libros de la naturaleza* contains a systematic body of knowledge about the ailments and therapeutic resources of women. Its importance grows all the more if we consider how little has been written on native women in the sixteenth century.

Historians working on the topic of women of New Spain have repeatedly complained about the lack of sources. Of course, we can find information in the chronicles, natural and moral histories in so far as they tackled aspects of

everyday life, some of them particularly concentrating on the women of the aristocracy (Socolow 2000, 17). Furthermore civil and judicial legal proceedings and the archives of convents provide useful information about women of various *calidades* in New Spain from the beginning of the sixteenth century (Díaz 2013; Martínez 2008).

At this point, it is tempting to turn to sources that were not conceived for or aimed at women, following the methodological proposal of some feminist historians who consider that those who are interested in talking about subjects who have left few material traces of their history or only historically fragmented records should engage in reading against the grain. It does not matter whether we use one document or several: this type of research concentrates on the possibility of construing our histories from other sources that allow us to construct dense contexts for realities that permanently slip through our fingers (Chaudhuri, Katz, and Perry 2010). In her study of the inquisitorial trial of Fátima, a Muslim slave in Spain in the sixteenth century, Elizabeth Perry (2010, 5) has shown that the methodological use of a diversity of documentary sources (genuine documents, chronicles of rebellions, literary criticism), read from their subtexts and silences, could yield more information than the questions and answers of the inquisitorial trials (androcentric official documents) that formed her documentary corpus.

Unlike certain groups of noble women in Europe, Indian women in New Spain did not know the art of writing.[6] During the last decades of the sixteenth and the first half of the seventeenth century, it was exclusively men who wrote books on medicine and surgery printed in New Spain. When they devoted chapters to the health and ailments of women, this was generally in terms of their referents: European women. All the same, they were unable to ignore the intensive exchange of therapeutic resources that took place between women of all ranks. The prescriptions or antidotes of these writers are an implicit testimony to such exchanges. As Harold J. Cook (2005, 101) has written, at the moment of defining the authorship of the texts that were written about the New World, they give a strong impression of having been written as the result of unique, personal experiences, acquired independently of collaboration or interaction with other systems of knowledge.

What Cook said is clearly expressed when we moved to the space of New Spain. In printed texts on medicine and surgery in the late sixteenth century and early decades of the seventeenth century, the specific women's health chapters

[6]There are manuscripts in Europe written for women by others or by themselves to guide their activities in the domestic space in the fields of medicine, cosmetics and cooking. These texts generally circulated among women of high rank within a family setting. An example is the *Manual de mujeres en el qual se contienen muchas y diversas reçetas muy buenas,* by Martínez Crespo (1996). Domestic medicine paid particular attention to women's ailments—generally connected with pregnancy, childbirth and the postnatal period—and their treatment.

where commonly used, even though there is a large absence of women's voices. The doctors, in some cases, had to resort to women of different *cualidades*, especially when it came to native medicinal plants. Nevertheless, they never felt the need to mention their sources, for example: Ioan de Barrios (1563–1645), a physician born in Colmenar Viejo, which was located in Madrid, Spain, who arrived in New Spain in 1589 (González 1995, 137). In his *Verdadera medicina, cirugia y astrologia* (1607), Barrios devoted a whole chapter to women's anatomy and ailments without saying hardly anything about native women. However, in his *Tractado cuarto de todas las yervas […]*, based on the Recchi compilation of Hernández's *materia medica* (Barrios 1607, 65r–65v), Barrios lists women's ailments and their remedies as Recchi had selected them. This text therefore matches that of Ximénez, because they both drew on the same source.

The ailments described by Barrios are all connected with matters affecting the uterus, menstruation and the expulsion of the placenta or the stillborn child. He also provided remedies to ease giving birth, to promote fertility and to avoid the risk of natural abortion (*mal parir*), as well as postnatal care, lesions to the external sexual organs (*llagas en las partes bajas*) and other matters affecting the same area. However, generally speaking, the information contained in the *Tractado cuarto* is very general and synthetic and fails to do justice to the selection carried out by Recchi. For instance, he condenses fifteen plants within a small space for uterine complaints (*mal de madre*) and twenty-eight medicinal plants to reduce the menstrual flow, sacrificing much of the information related to the preparation, application and dosage of simples and compounds.

In this respect the *Antidotario* of López de Hinojosos (1535–1596), or the *Cuatro libros de la naturaleza* of Ximénez provide better information regarding local plants. In his *Summa y recopilación de chirugía con un arte para sangrar muy útil y provechosa* (1578, second edition 1595), López de Hinojosos (1535–1597), who was a barber surgeon, recognized for his expertise (Martínez-Hernández 2011, 461), devoted a whole chapter to problems connected with pregnancy, childbirth and postnatal complications (Lopez de los Hinojosos 1595, 204). He did not refer explicitly to native women, but the "Antidotario de las drogas que van en este libro" with which he concluded the work indicates that he was aware of the practices of native women, many of which were also used by Spanish and Creole women.

Juan de Cárdenas (1563–?) was a doctor from Spain. He differentiated between the physiology of Spanish women and their native counterparts in his *Problemas y secretos maravillosos de las Indias* (2003 [1591]). Like his contemporaries, he included native therapeutic practices, particularly the use of tobacco. This plant was used to treat uterine pains and obstructions. Like the physicians and surgeons of New Spain, Cárdenas (2003 [1591], 194) recognized tobacco

as "the strangest form of medicine ever imagined in the art of medicine." The physician attributed a multitude of applications to tobacco and recognized that it was good for men and women, Spanish and native, who masticate it or ingest the smoke through a cylinder of dried tobacco leaves (Cárdenas 2003 [1591], 194).

The texts referred to above conform to the dominant conception of Galenic physiology, in which the menstrual flow was part of the main system to explain women's ailments. However, one of the novelties of these texts, which were inspired by and aimed at the context of New Spain, is the incorporation of local therapeutic knowledge maintained and passed on by native women to other women, even though they are not mentioned explicitly in the texts themselves (Pardo-Tomás 2011, 93–108).

Another contribution in this field was the *Tratado breve de medicina y de todas las enfermedades* (1592) by the Augustinian physician Agustín Farfán (1532–1604), though the coverage of women's ailments was shorter than in the 1579 edition of the work. Farfán (1592, 35) advocated the use of cupping or ablutions (chamomile, dill, rue, fennel, mallows and wormwood) to the feet to reduce the menstrual flow, as well as going into detail on the treatment of uterine ulcers.[7] Of the previous texts, this is the one that probably incorporates women's voices the least.

The domestic space and the market played a key role as the natural place for exchanges between women. Moreover, as Susan Migden Socolow (2000, 40) suggests, the native women soon became "cultural interpreters" between the conquistadores and the conquered. Native women were obliged to work as cooks, servants, nurses and washerwomen and played a major role in the domestic life of the Spaniards. Hugh Glenn Cagle (2012, 185) has noted the same phenomenon with regard to women in Goa. They worked in the most intimate of all colonial spaces: the homes of the Portuguese, and like the native women, they had a reputation for knowing about native botanical systems and the medicinal properties of plants. It was women of every *calidad* who frequented the markets and squares of Mexico City, Huequechula or Toximaroa to buy peyote in New Spain (Sarabia 2014, 21–39). These markets were full of vendors selling herbs, flowers and roots along with advice on how to use them as food or for medicinal purposes. These

[7] For these, he proposed gourd powder and collyrium, or Lanfranco water, which should contain alum, verdigris and white wine. He considered that "lesions and inflammations are commonly found in the genitals too, due to the choleric nature of menstrual blood or too much intercourse." His remedy was the application of a rinse with dried roses, violets, barberry, rosemary, olive leaves and a little rockrose, when available. After these plants had been boiled over a slow fire, the resulting solution should be applied once a day. He also proposed the preparation of an unguent of pumpkin seed oil, poppies, sweet almonds, sesame, rosé, lard, egg white and white lead powder. To treat uterine gangrene he recommended Egyptian unguent. It is interesting to note that he proposes the same treatments for complaints of the sexual organs of both women and men (ulcers, inflammations, gangrene), Farfán (1592, 203–204v).

spaces were the scenario of intense exchange as well as of disputes and social tensions.

A Classificatory Proposal

A little more than 460 plants are discussed in *Cuatro libros de la naturaleza* by Ximénez, 81 of which were prescribed for problems connected with the menstrual flow, the uterus, childbirth, infertility or the production of breast milk, among the most important. In other words, these were conditions connected with reproduction and the female sexual organs, although not all of them were exclusively for women. The same plant could be used for various purposes and be recommended for men and women alike. Modern chemical analysis of some of these plants has demonstrated their capacity to facilitate flow in the pelvic zone, to produce contraction of the uterine muscle, to heal wounds, or as a painkiller, purgative or narcotic.[8] Most of them, however, still await botanical identification and laboratory analysis.

Two major systems are applied to classify the therapeutic action of plant resources. On the one hand is their purgative action. According to Fresquet, purging and bloodletting were considered the "main remedies" in Europe, although other techniques were also in use such as vomiting, leeches, cupping, baths, clysters, exercise, rubbing and diet (Fresquet Febrer 1993, 76).[9] The use of purgatives and bloodletting were deeply rooted practices that persisted through the Renaissance down to the Enlightenment. Both have been crucial in Galenic medicine, though with important differences. Practitioners of iatrophysics tended to defend bloodletting, although some of them refused to apply it (Puerto Sarmiento and Alegre Pére 2001, 168–169). Nevertheless, in *Cuatro libros de la naturaleza* the search for the purgative action of plants is only mentioned. However, it did not refer to techniques of venesection as a therapeutic adjuvant.

A different type of plant classification at work in *Cuatro libros de la naturaleza* is the Galenic doctrine of qualities and degrees, a permanent feature of European treatises on simples and antidotes in the sixteenth century. This doctrine proposed a quantitative classification of the medicinal action of active substances and enabled advances in dosage, a theme that persisted in pharmacology

[8]The botanical identifications are: cempoalxochitl, *Tagetes erecta L.*; chilli, *Capsicum annuum L.*; cihuapatli, *Montanoa tomensosa Cerv.*; mecaxochitl, *Piper amalgo* L. 1, *Piper auritum* H. B. K.?; xocoxochitl, *Pimienta officinalis Lindl*; yoloxochitl, *Magnolia sp. Talauma sp*. according to Waizel Bucay (2006, 187). While these plants are cited in *Cuatro libros de la naturaleza*, we need to deepen from an interdisciplinary perspective to clear its medicinal action.

[9]For native opposition to bloodletting in New Spain, see Pardo-Tomás (2014, 41–65).

in subsequent centuries.[10] Not only simples and compounds, but also bodies and ailments were classified. Investigation of the links and differences between these two systems, however, would go beyond the limits of the present contribution.

What should not be forgotten is that classification inevitably leads to the question of a hierarchy and evaluation of certain features, elements or characteristics. Classification is an indispensible part of any process of knowledge formation. A key theme in *Cuatro libros de la naturaleza* was to name and differentiate the world in order to easily access and manipulate it. This was due to the inclusion of the conceptions of the primary author, Hernández, with regard to pre-existing classifications of the natural world, of bodies and of ailments.

The classification presented here is only provisional because it depends on the values that are taken into account in establishing the organizational principles of women's medicine. In this case, plants have been selected that meet at least one of the following criteria: a) the generic name of the plant directly refers to women or to women's medicine; b) the description in *Cuatro libros de la naturaleza* contains a direct reference to the plant as specific to women in spite of being used in other types of ailment, in other words, it is used in connection with more than three women's ailments; c) the local appreciation of this plant (when it was available).

Women's Medicine. A Preliminary Study

As Evelyne Berriot-Salvadore (2003, 390) has pointed out, Galenic physiology justified a female physiology based on dysfunction, condemning women and their bodies to an inferior status vis-à-vis men. These ideas were in line with the pre-existing social arrangement. In this theory the menstrual flow became one of the key systems of Galenic physiology. These Galenic notions of menstrual flow are present in *Cuatro libros de la naturaleza*, although in many respects attenuated by the influence of native ideas about women's health. Ximénez still considered the retention of the menstrual flow to be a symptom of an ailment. In the medical treatises of the period, retention was usually considered to be a symptom of an obstruction, and thus of a concentration of thick and phlegmatic humors which needed to be dissolved. Various plants were applied to remedy this problem and others connected with menstruation, either to promote the flow, such as

[10]Fresquet Febrer (1993, 73) states that the doctrine of degrees was basically defined as the "excess of heat, moisture, dryness or cold. These degrees made it possible to classify medicaments and their action on the organism." As he notes, this classification established a unit of measure of the active substances in quantitative terms while also contributing to progress in dosage.

xiuhtotonqui[11] or oregano of Cuernavaca (Ximénez 1615, 108v), or to staunch or regulate it.

Following Hernández, Ximénez (1615, 126 and 142) sought to retain the flow of women when they were pregnant or had just given birth, recommending chichiantic and axuchiatl for this purpose. Painkillers and narcotics such as nextlaçocolli from Yacapichtlan were given to woman after childbirth to relieve uterine pain, or ololiuhqui to strengthen the hips.[12] Exchanges in the therapy of women in New Spain were not long in making their appearance. Alonso López de Hinojosos (1595, 191v) included a recipe consisting of aristolochia, epazote, cihuapatli, honey and oil to reduce the flow.

As in every medical treatise, in *Cuatro libros de la naturaleza* the blame for infertility was placed on the women. Among the recommended treatments were oceloxochitl[13] or atehuapatli.[14] Other plants were recommended to increase the flow of breast milk.

Tobacco was one of the narcotic plants that had the benefit of affecting the uterus and menstruation. Ximénez noted that when its leaves are applied, "the uterus is conducted back and returns to its place in a moment, the fainting disappears, and it could even be justifiably claimed that it dispels death itself, which already seemed to have held the weak and delicate body of the sick woman in its grasp with such an exhausting affliction." Tobacco could be taken or applied in the form of smoke to clean the uterus. Tobacco taken as snuff is comforting, decreases fatigue and "it seems that a disregard and oblivion of the animal faculty enters the spirit, which we may call intoxication as the devotees say" (Ximénez 1615, 94v). Tobacco was one of the most efficacious plants when its smoke was used to cure the ailments of women of every station. This was the verdict of the treatises on medicine and surgery like that of Juan de Cárdenas that were published in New Spain.

The commonest among the forms of preparation of the medicinal plants were coctions, grindings or dry powders which could be inhaled or dissolved (usually in a maize-based liquid). The medicine might come from part of a plant or the whole plant. Other practices included "mouthwashes, draughts and gargling,"

[11] Xiuhtotonqui is a plant with many uses, including encouraging the onset of menstrual flow, Ximénez (1615, 112).

[12] Ximénez (1615, 127 and 162v). Ololiuhqui was generally used for "broken or dislocated bones," and other complaints. It mitigated the pain caused by syphilis and ailments resulting from cold such as flatulence and swellings, Ximénez (1615, 77v–78).

[13] Oceloxochitl is classified as *Tigridia pavonia*.

[14] Ximénez (1615, 150v) noted that oceloxochitl was abundant in the cloister of the convent of Santo Domingo; "some say that if women drink it, it helps them to conceive and to make them fertile." Atehuapatli: "when drunk, the root helps omen to conceive, it is mainly taken with what is called chilatolli and obstructs vomiting," Ximénez (1615, 145). It is now classified as *Achimenes coccinea* Pers.

cataplasms, ointments or poultices (Waizel Bucay 2006, 184). It should be kept in mind that medicinal therapy was not the only form of treating women's ailments, for there was a wide range of therapies involving cold or thermal baths, diet and rest, which should be included in any analysis of the therapeutic techniques related to women's health.

Domestic Space as the Domain of the Women's Medicine

The domestic space was the domain of women's medicine. *Cuatro libros de la naturaleza* dealt with plants to expel the afterbirth (*pares*, also known as *secundinas* in the treatises), a stillborn baby or to speed up birth (three events that often occur together). Yauhtli was used to bring on menstruation, expel a stillborn child, to treat uterine complaints and to stimulate milk production.[15] It was considered very efficacious for thinning thick and tenacious phlegmatic humors, which caused obstructions. Besides recognition of its medicinal effects, it was also considered a good candidate for acclimatization in Spain. Although in *Cuatro libros de la naturaleza* this point is not explicit, it is very probable that it regarded this plant as a useful medicine for women in the Iberian Peninsula:

> I conjecture that if it were taken to Spain it would do very well in the soil of Madrid and would be a great and beautiful ornament for the gardens of the King.[16] (Ximénez 1615, 84–84v)

Unfortunately information about this plant stops at this point and the text does not go into it any further.

Another important plant in this work is the tlalquequetzal[17] (yarrow), which like the cihuapatli, adorned the pots and gardens of the women (Ximénez 1615, 107v). Ximénez follows Hernández when he writes that the natives held this "feather of the land" in esteem, as they considered it as one of the "gift herbs." Women with uterine pains appreciated it, as well:

> It is a diuretic, stimulates menstruation, comforts the stomach weakened by cold, applied externally or in a potion, while the powder alleviates flatulence, stops belly flows, heals lesions in the external sexual organs, dissolves tumours and swellings, clears obstructions, mainly of the uterus, is an invigorating tonic that restores nat-

[15] In *Cuatro libros de la naturaleza* this plant was recorded as yyauhtli, but orthographic convention currently writes Yauhtli (*Tagetes lucida* Cav.).

[16] The Spanish original: "[si] se llevase a España á lo que yo puedo alcanzar con mi conjetura se daría muy bien en tierra de Madrid y aun seria de mucho ornamento y hermosura á los jardines del Rey."

[17] The botanical classification of this plant is *Achillea millefolium* L.

> ural heat that has been debilitated for many days; crushed and applied as a poultice it cures the scabies that often affects the heads of children, through its astringent and drying quality, its smoke benefits drowning of the uterus when blown through a cylinder into that part or powdered and administered in whatever drink is most convenient, it eases childbirth, causes dilation and expels the afterbirth, when drunk it combats diarrhoea in both children and adults, and some declare that when its juice is ingested through the mouth in the quantity of five ounces, it purges the humours by vomiting.[18] (Ximénez 1615, 107v–108)

Cihuapatli was a plant appreciated by women.[19] *Cuatro libros de la naturaleza* continues that it was very common to find it planted in pots to embellish the corridors or windows of the homes of native women. They would hang them from racks to have a supply ready at any moment. Hernández noted some twenty varieties, but he concentrated on a species that he called cihuapatli emonítica:

> A coction of it is given to those in labor in a quantity of three or four ounces to ease the childbirth with great success, the coction or juice is very good for the breast, the leaves are macerated in the quantity of a handful and administered to drink in water or some suitable liquor, they ease swellings of the uterus, cure dropsy and stimulate menstruation.[20] (Ximénez 1615, 103–103v)

Another species of less importance is the cihuapatli mayor. The description is brief and concise, but no less adequate. The epithet *emonítica* is applied because it resembles the hemionitis described by Dioscorides; according to Hernández, the

[18]The Spanish original: "mueve la orina, provoca la regla, conforta el estomago debilitado por causa fría, aplicada por de fuera, ó dada a beber, hecha polvo, resuelve las ventosidades, detiene los flujos del vientre, cura las llagas de las partes inferiores, resuelve los tumores, é hinchazones, abre las opilaciones, mayormente de la madre, repara y restituye la fuerza, y el calor natural debilitado de muchos días, majada y aplicada en forma de emplasto, cura la sarna que suele nacer en la cabeza de los niños, mediante la virtud astringente y de secante que tiene, aprovecha su perfume y sahumerio al ahogamiento de la madre [útero], aplicada en calilla, por aquella parte, ó dando a beber su polvo en aquel licor que se echare de ver ser mas acomodado, facilita el parto, abre y expele las pares, detiene las cámaras, así de los niños como de los mayores bebiéndola, y algunos afirman, que tomando su zumo por la boca en cantidad de cinco onzas, purga por vomito los humores."

[19]Recent chemical analyses have used molecules of zoapatle substances, but it does not have the same effect as when the herb is taken in an infusion. Its oxytocic action may therefore depend on synergy among different compounds of the plant, Castillo, Quijano, and Reyes Chilpa (2012).

[20]The Spanish orginal: "Se suele dar su cocimiento á las que paren en cantidad de tres, ó cuatro onzas, para que más fácilmente paran a luz, con buen suceso el cocimiento ó zumo es útil grandemente al pecho, las hojas majadas en cantidad de un puño, y dadas a beber en agua, ó en algún licor convenientemente, aplacan las hinchazones del vientre, cura la hidropesía, provoca la regla."

Spanish women of New Spain called it *hierba de la madre* (herb of the uterus). Not only was cihuapatli given an epithet of Greek origin, but it also passed successfully into the world of the Spanish women (Ximénez 1615, 103–103v). The plants listed by Hernández continued to preserve their name in Náhuatl or, in few cases, in a different indigenous language. The hybrid cihuapatli emonítica expresses the movements, transformations and linguistic changes that were surfacing within a few decades of 1521 (Gruzinski 2010, 40).

Sahagún and Martín de la Cruz also mentioned cihuapatli. It continued to be used with success by empirical midwives in the nineteenth century and was used by university physicians for the same purpose: to speed up childbirth. Modern chemical analysis has classified it as an agent for stimulating flow in the pelvic zone and producing contraction of the uterine muscle. The ample bibliography on the subject is an indication of its exceptional role among the other emmenagogue herbs.

Generally speaking, plants with this property were used to treat retention of the menstrual flow and their use was always preceded by retention of the urine or some other type of obstruction, which was a recurrent theme to explain retention in any part of the body. This is why the strategy to remove the difficulty was connected with the action of opening, clearing and getting the blocked flows to move freely again, which were almost always obstructed by "thick and tenacious humours."

Cuatro libros de la naturaleza recognizes that the uterus was subject to pains and drowning. Although leaving out the Hippocratic notion of the movement of the uterus within the body, this text recognizes that the uterus does have specific, limited movements. The native remedies for the uterus are derived from a diversity of plants that had the capacity to maintain the uterus in place or drive it back to its proper place. They included the application of copalquahuitl (copal resin) smoke or a compound of copalquahuitl mixed with gum, tecomahaca, grey pitch (turpentine resin) and Campeche wax.[21]

The large absence in *Cuatro libros de la naturaleza* is any reference to the provocation of abortion, which was enveloped in silence. Bernardino de Sahagún provided a wealth of information about natural abortion and abortion through negligence on the part of the woman or some relative. This raises the question of the assumptions about gender that informed Hernández' writing; there is no neutrality of the "questioner," the term used in the *relaciones geográficas*. On

[21] Copalquahuitl, the copal resin tree, was considered the source of a major remedy for all ailments produced by cold, including headache and "drowning" of the uterus. It was recommended to use the smoke from its resin when mixed with other compounds: "Gerroto [Ceroto] mexicano recibe. Copal. Incienso de la tierra. Estoraquelido, que es el aceite de Liquidambar, de cada uno una onza. Tecomahaca. Aceite común. Goma de Liquidambar. De cada uno dos onzas, Pez griega. Cera de Campeche. Cuatro onzas de todo derretido, y misto se haga, ungüento" Ximénez (1615, 10v–11).

the other hand, it has to be taken into account that this silence regarding abortive practices was conditioned by the decline of the native population.[22] Despite their absence in the record, the clearly destabilizing character of such practices must have played a fundamental role in the process of instilling the Catholic faith.[23]

Francisco López de Gómara (1511–1566?) recorded in his *Historia de la conquista de México* that in the time of Moctezuma, some of the women who were in his service as wives or concubines aborted under the persuasion of the devil, "taking substances to expel the foetus, or perhaps their sons would not have anything to inherit" (López de Gómara 2003, 179). In his *Confesionario mayor en lengua mexicana y castellana* (1569), Molina (1569, 33v) formulated various questions in order to ascertain whether any men or women had administered a potion to harm someone, or to make a pregnant woman lose her child. He asked the women directly whether they had drunk any beverage to "expel the dead foetus, by which you killed your son, or caused him to take ill, or gave him suck in a way that hurt him so that he could no longer drink at the breast, or lay on him as you slept and crushed him to death." Molina also asked the women whether they had squeezed their belly to "move and kill" the child. Although he recognized that the women could cause the death of a child through involuntary causes, such as carrying heavy weight or making a sudden violent movement, he also recognized that they could exert a mechanical force on the uterus (Molina 1569, 34).

In theory, some of the emmenagogue plants listed here could have been used to provoke abortion or to control fertility. Ethnographic research has revealed the popular use of cempoalxochitl, which is apparently still sold today for this purpose in some markets in Mexico, but more information is required on this point (Waizel Bucay 2006, 341). Nevertheless, this does draw attention to the fact that the entry on cempoalxochitl in *Cuatro Libros de la Naturaleza* does not contain any information in this respect. Was it used in the past to provoke abortion?

For the author of *Cuatro Libros de la Naturaleza*, cempoalxochitl corrected and calmed the stomach; was a diuretic and stimulated the menstrual flow; was good for intermittent fevers; alleviated flatulence; and was an aphrodisiac. In a balsam it was a remedy for lesions and hemorrhoids (Ximénez 1615, 81–81v). Further ethnographic studies may throw light on its possible other uses.

[22] According to Gruzinski (2010, 109), the native population in New Spain decreased permanently in the course of the sixteenth century. In 1560 it numbered little more than 75,000 inhabitants, possibly 2,000 Mestizos and 1,000 Mulatos. The estimate for 1569 is approximately 35,000, and only 25,000 by 1580.

[23] According to Schiebinger (2004, 18), if a woman has tried to abort, she is frequently the object of strong social condemnation for having dashed the hopes of life of the child she was bearing. This makes it very difficult to investigate abortion and the use of abortive measures in the past because that knowledge is usually suppressed in the present.

Nineteenth-century *materia medica* virtually ignored cempoalxochitl, chilli, yauhtli, mecaxochitl and xiuhtotonqui. The exceptions were yoloxochitl and cihuapatli, which, as we have seen, continued to be discussed in the texts of the eighteenth and nineteenth centuries.[24] In *Cuatro libros de la naturaleza* yoloxochitl was considered "an admirable remedy for sterility and to arouse the uterus." Local trade in this plant was important in the sixteenth and seventeenth centuries. It was appreciated for its "beauty and pleasing appearance." The plant "arrives in all of New Spain, and where it grows they take it over dozens of leagues to sell." A coction of the flower mixed with mecaxochitl xuchinacaztli, tlilxochitl,[25] colopatli and opossum tail had interesting medicinal properties (Ximénez 1615, 8–8v). As mentioned above, mecaxochitl and tlilxochitl are emmenagogue herbs. As for opossum tail, some chemical research has found prostaglandins, which help to ease childbirth, but this area too requires further investigation (Castillo, Quijano, and Reyes Chilpa 2012, 49). Yoloxochitl was studied in the *materia medica* texts of the nineteenth century as a cardiac tonic.

Provisional Conclusions

Ever since antiquity, women's medicine is a form of knowledge that has been produced by women themselves, but they are strikingly absent from the medical texts. Medical and surgical Novohispanic treaties (Barrios, López de los Hinojosos, Farfán and Cardenas) were no exception. The authors ignored the expertise of women, however, it is possible to recognize it in some of their works. There can be no denying that the women's medicine presented in *Cuatro libros de la naturaleza* embodies a more complex history than the simple aggregation or transformation in the conception of remedies from a native to a Galenic system. Women's role were conditioned by the gender system that prevailed in past societies. Women and men were in contact with plants, and both sexes had mastered the systems of botanical classification and forms of preparation and application, but they thought about them in different ways and put them to very different uses. In *Cuatro libros de la naturaleza* it is gender that is the principal factor in the social construction of ailments, though later race or social class were also to become a component in the definition of women's ailments. As Socolow has argued, the latter two categories (race and social class) were capable of transformation, but not gender. It was the determinant social factor in the formation of the individual

[24]The Instituto Médico Nacional included cihuapahtli in *Datos para la materia médica mexicana* in 1894 under the name zoapatle, *Montanoa tomentosa*. That document shows that the plant was widely accepted by physicians and used in public and private hospitals to induce contractions; it was also used by midwives. However, it was also recognized that applying it at the wrong time or in the wrong dose could cause irreversible damage (necrosis of the uterus) or even lead to the death of the mother.
[25]This plant is classified as *Vanilla fragrans* (Sal.) Ames, *Vanilla planifolia* Andr.

identity of both women and men, whose roles are social constructs, not natural entities.

The emphasis in *Cuatro libros de la naturaleza* on the presence of emmenagogue herbs in pots, gardens and hanging from racks in the domestic spaces of native women should lead us to reflect on the control of their resources and therapeutic practices, as well as on how the domestic space of women of different *calidades* was the site of intensive interactions, contacts and transformations in the therapeutic knowledge of women in New Spain. This is what the medical and surgical texts tell us that were printed towards the end of the sixteenth and in the early decades of the seventeenth century.

This contribution opened with the fundamental importance of Hernández as a source for medical and botanical research in Mexico in the late eighteenth and nineteenth centuries. The physicians and naturalists of the nineteenth and twentieth centuries emulated the academic historiography of their time, conferring scientific status on sources from the colonial past. All the same, they were selective when it came to developing lines of pharmacological research. Perhaps we may infer that one reason for this may have been the greater importance assigned to alkaloids than to other types of medical substances in that research. Alkaloids are molecules that have a strong effect on the central nervous system (painkillers, soporifics, tonics and, in general, all those substances that modify perceptions or state of mind). The physicians and naturalists claim to have maintained a firm commitment to the ailments of women, including of course those connected with pregnancy and childbirth, but the *materia medica* texts tell a different story. Our analysis of the therapeutic arsenal of emmenagogue herbs in Ximénez has shown the persistence of cihuaptli and yoloxochitl in Mexican *materia medica*, but what happened to the other plants?

From the perspective of the Anthropocene, we may ask further questions about the global impact of the Hernandez' mission, especially its impact on the landscape and the domestication of wild plants. In future research it would be desirable to establish if the configuration of new natural identities from the natural history are also expressed in the transformation of the endemic flora. In other words, to measure whether this had an impact on the transformation of agricultural methods, in the domestication of wild species or in the disappearance of some endemic flora, etc.

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