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Review

Plants used during maternity, menstrual cycle and other women's health conditions among Brazilian cultures

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ABSTRACT

Ethnopharmacological relevance: For innumerous clinical cases related to women's health and precarious medical care in developing countries, a large repertoire of plants have been used as popular medicines in order to fill this gap, which in a certain way creates health risks to users, since pharmacological and toxicological tests are still insufficient to guarantee their efficacy and safety. Besides therapeutic use, abortive plants are broadly used in countries where abortion is prohibited, increasing that risk even more. In this way, ethnopharmacological studies that register plants used for women's health can contribute not only to the selection of potential bioactives, enriching the repertoire of drugs available to females, above all in public health systems, but also questioning the safety of products that are used without prescription.

Aims and objectives: This review aims at determining plants applied by Brazilian cultures in the treatment of conditions related to maternity, menstrual cycle and other women's health particularities, and to supplement the lack of epidemiological data available to assess the health of indigenous, rural and other populations of Brazilian women.

Materials and methods: A literature review was conducted of the collection at the Ethnobotanical and Ethnopharmacological Center of the Federal University of São Paulo (period covered: 1965 to 2012). All of the 343 articles were consulted and 31 articles mentioning therapeutic uses of interest were selected. Relevant information was extracted to compose Table 1 – Maternity, Table 2 – Menstrual Cycle and Table 3 – Other Conditions. Data was statistically analyzed in order to generate the discussion about plants used in healing contexts by different Brazilian ethnicities. A bibliographic review was performed using the Scopus database to collect the following information about the most cited plants: ethnobotany/ethnopharmacology of non-Brazilian cultures for women's health conditions, pharmacology, toxicology, and adverse reactions.

Results: A total of 319 species were cited for 22 indications related to women's health. Ninety-seven species were indicated for conditions related to maternity, 94 to the menstrual cycle and 232 to others. The same species could be present in more than one of these three categories. The most cited family was *Fabaceae* (13.5%), and the species were *Ruta graveolens* L. (1.76%) and *Strychnos pseudoquina* A. St.-Hil (1.76%). The most frequent part utilized, mode of preparation and route of administration were leaves (2.0%), tea (73.38%) and oral (87. 2%), respectively. The indications that showed the highest number of species were: to treat venereal diseases (69 species), abortive (54) and anti-inflammatory for the ovaries and/or uterus (54). According to our bibliographic survey, among the 19 most indicated species in this review, only four are also used by non-Brazilian cultures for conditions related to women's health; 25% of them were pharmacologically investigated and it was possible to validate their ethnopharmacological/ethnobotanical use, 10.5% have presented well-described adverse reactions and for 42.1% of these species toxicological studies were performed.

Conclusion: The survey raised important data about plants implemented in healing related to women's health conditions by Brazilian cultures and their practices. The compilation presented in this study enables the realization of further investigation regarding the development of herbal medicines and

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contributes to the incrementation of policies focused on these cultures. Further phytochemical, pharmacological and toxicological studies should be conducted, which will allow the discovery of pharmacological properties, bioactive constituents, and moreover, adequate posology, manner of use and adverse events.

Contents

1. Introduction

Women's health and women's health care are concepts that have been discussed and lately have been changing significantly due to social movements. In particular, feminist social movements that began to take place in the 1960s were remarkable in terms of knowledge production and the conformation of institutions. In Brazil, only in 1994 did the Health Ministry create the Comprehensive Assistance Program for Women's Health (PAISM), in which the complexity of women's health issues based on completeness of policy and autonomy of women regarding reproductive issues was taken into account. The assessment of women's health problems and issues on the wide realization of the Brazilian System of Health (SUS) and the PAISM policies returned as a focus of feminist movements because of the First National Conference for Women's Policies that occurred in 2004. It aimed, this time, at health issues, gender and kept in mind the need to consider specific groups such as lesbians, black women, indigenous women and female prostitutes. As a result, in the same year, the Health Ministry generated the National Attention Integral to Women's Health Policy (PNAISM), which has as main goals: the reduction of maternal mortality and complications in abortion, increase of pregnancy monitoring, and, the prevention and control of more prevalent pathologies (BRASIL, 2004; Costa et al., 2007).

In 2013, the National Comprehensive Health Policy of the Rural and Forest Populations (PNSIPCF) was created by the Brazilian Ministry of Health, having in mind the ideal of addressing specific groups in society. This policy was aimed at promoting the health of rural and forest populations through practices and projects that recognize the individuality of gender, generation, race/color, ethnicity and sexual orientation, taking into consideration and valuing the knowledge and traditional health practices of these populations and respecting their specificities (BRASIL, 2013).

PAISM should cover the health of the Brazilian female population over 10 years old, whose number is estimated at more than 73 million people, of whom 65.0% are at the reproductive age (BRASIL, 2004). Mortality associated with eclampsia (21.2%), hemorrhagic syndromes (12.4%), puerperal infection (7.0%) and abortion (9.4%) are the four major causes of maternal death (Tanaka, 2001). However, 92.0% of maternal deaths could be avoided (BRASIL, 2004). According to Adesse and Monteiro (2007), a decrease in the number of hospitalizations related to abortion registered by SUS between 1992 (344,956) and 2005 (250,447) occurred, which has also reduced the estimated number of unsafe abortions from 1,455,283 to 1,056,573.

The World Health Organization (WHO) recognizes that countries with restrictive abortion laws have high induced abortion rates, most of the abortions being unsafe, and women's health and lives are often jeopardized. Abortion rates are not reduced due to legal restrictions if women face an unplanned pregnancy. Instead, they risk their health and lives by seeking unsafe methods. On the other hand, clandestine and unsafe abortions have become legal and safe in countries where legal restrictions have been removed, reducing the rates of maternal mortality (WHO, 2012).

In Western Europe the countries with the most permissive abortion laws have the lowest rates of maternal mortality due to unsafe abortion, since abortions are more available, safer, and performed by trained professionals. The prevention of unwanted pregnancy and availability of safe and legal abortion can be achieved by governments with unrestrictive abortion laws that provide sexual education followed by expanded access to contraceptives (WHO, 2008).

According to the Brazilian legislation (BRASIL, 1940), abortion is legal only in the cases of rape, life-threatening issues, fetus health problems or malformation. Even so, abortion is still widely performed and studies show that the main methods utilized are synthetic medications, such as misoprostol which are less of a health risk and require less cost with hospitalization after the abortion (BRASIL, 2009). Unfortunately, data about teas used as abortives, a practice of rural and indigenous women, and the risks involved in abortion methods is scarce, mainly because of the lack of supervision of the informal/formal herbal drug trade in Brazil (Neto et al., 2010), the veracity of reports written by those who performed these procedures since they are illegal acts, and the fact that this subject is still taboo in the country (BRASIL, 2009).

Epidemiological data available to assess the health of indigenous women and the female adolescent population, as well as the resident and rural female worker population is insufficient. There are few studies that show the quality of life and health practices of these women, making it difficult to propose actions consistent with this reality (BRASIL, 2004).

Since medicinal plants play a significant role in the treatments associated with women's health, ethnopharmacology data about plants used in women's healthcare can contribute to reduce mortality rates, either through pharmacological studies to prove their effectiveness or toxicological studies to assess their safety.

International reviews show a low number of articles focusing on the use of plants for women's health conditions through folk

medicine and most of the studies published were from Asia (Adnan et al., 2015; de Boer and Lamxay, 2009; Lamxay et al., 2011; Liulan et al. 2003; Ong and Kim, 2015; Shah et al., 2013; Srithi et al., 2012), Africa (Malan and Neuba, 2011; Razafindraibe et al., 2013; Telefo et al., 2011; van der Kooi and Theobald, 2006) and Oceania (Bourdy and Walter, 1992). Few studies were performed in the Americas (Bussmann and Glenn, 2010; Michel et al., 2012; Torri, 2013) and, despite its endemic richness and cultural diversity, no data was found regarding this specific topic in Brazil.

In this context, this manuscript is a literature review about medicinal plants applied by various Brazilian rural communities, indigenous and local wisdom in treating conditions related to women's health. It intends to understand local perspectives on the theme and relate different uses of each plant during maternity, the menstrual cycle and other women's health conditions, in order to provide knowledge about the traditional health practices of these populations. Also, the data presented in this manuscript contributes to the selection of potential bioactives, enriching the repertoire of drugs available to females and questioning the safety of the products that are used without prescription.

2. Methods

This literature review was based on the collection of scientific papers of the Ethnobotanical and Ethnopharmacological Center of the Federal University of São Paulo (online at www.cee.unifesp.br). That collection covers the period between 1965 and 2012, and is composed of 512 titles of contemporary publications, including books (98), chapters (42), monographs/theses/dissertations (29) and scientific articles (343) which describe plants used in healing contexts by various Brazilian ethnicities, many of them of difficult access, because some of the papers are not, or were not, indexed in the international basis at the time of the article's publication.

This database has been assembled by its coordinator, Eliana Rodrigues, since 1992. Innumerous Universities in Brazil were visited and libraries were reviewed in order to collect scientific articles, books and theses about ethnopharmacology and ethnobotany. Also, frequently, the coordinator has asked researchers for the published material and, beyond that, data published regarding this theme has been gathered from Brazilian Journals.

All of the 343 articles were consulted, and the 31 mentioning therapeutic uses of interest were selected, read and their data was extracted to compose the tables below. These tables describe the following information, when available: plant species and its family, part used, therapeutic use, mode of preparation, administration route, culture in which it is used, and the ethnobotanical/ethnopharmacological reference. The species, botanical families and origin (endemic, native or exotic to Brazil) were checked through the websites: Brazilian Flora Species List (http://floradobrasil.jbrj.gov.br/), Tropicos® (http://www.tropicos.org/Home.aspx) and The Plant List (http://www.theplantlist.org/). After that, the data was organized into three categories, listed in alphabetical order into three large tables, according to their application. They are: Table 1 – Maternity (including pregnancy, childbirth, postpartum and breastfeeding), Table 2 – Menstrual Cycle and Table 3 – Other Conditions. After that, the data was statistically analyzed in order to generate the discussion about plants used in healing contexts by different Brazilian cultures.

After a quantitative analysis, 19 species were indentified as the most cited species in this review (9 species belonging to Category 1, 4 to category 2 and 7 to category 3). In order to verify their use in women's health conditions by non-Brazilian cultures, ethnobotany/ethnopharmacology information was searched through a bibliographic review performed in October 2015 in Scopus (http://www.scopus.com/). Also, studies about pharmacology, toxicology, phytochemical and adverse reactions were searched in this database.

To verify if other studies have found similar results to the ones cited in this manuscript, a pharmacology review of the 19 most cited plants was performed. As many compounds have been found for each species, we have chosen to register only isolated chemical compounds that were pharmacologically tested. Only articles available in their complete version, whose tests were performed *in vivo* were considered. Articles containing only the abstract were included if enough information for our analyses was avaiable in this section. In the same way, safety and toxicological aspects of the 19 most indicated plants were reviewed and analyzed. Toxicological studies containing parameters as medium lethal dose (DL_{50}), half maximal inhibitory concentration (IC_{50}) and adverse reactions were selected. Information gathered from this literature review was checked, and Tables 4–6 were created.

3. Results and discussion

The analysis of the articles revealed 319 species used for 22 indications related to women's health. The most cited family was Fabaceae (13.5%), and the species were *Ruta graveolens* L. (1.76%) and *Strychnos pseudoquina* A. St.-Hil (1.76%). The most frequent part utilized, mode of preparation and route of administration were leaves (2.0%), tea (73.38%) and oral (87.2%), respectively. 34.8% of the indications were made by Brazilian popular medicine in general, as referred in source documents.

The data evaluated was divided into the three categories mentioned above, with respective frequencies of species: Table 1 – Maternity (97 species mentioned), Table 2 – Menstrual Cycle (94) and Table 3 – Other Conditions (232), totaling 423 species cited, considering that the same species may have been suitable for more than one use.

Table 1 represents plants used in maternity, including 11 uses related to pregnancy, childbirth, postpartum and breastfeeding. They are: anti-abortive (2), anti-hemorrhagic (postpartum) (11), contraindicated during pregnancy (36), “fallen” uterus (1), for newborns to start walking faster (1), to heal the navel of the newborn (3), to increase milk for breastfeeding (3), to ease delivery (21), to determine the sex of the child (1), used during pregnancy (11) and for “washing” postpartum (7). In Table 2 plants are related to five possible conditions of the menstrual cycle. They are: contraceptive/to avoid pregnancy (23), menopause (5), menstrual cramps (17), to promote fertility (9) and to restore menstrual flux to normal levels (41). In Table 3, six uses were indicated for various purposes. They are: abortive (54), anti-inflammatory for the ovaries and/or uterus (54), sexual impotence/aphrodisiac (41), to manipulate sexual activities/decrease libido (5), to treat venereal diseases (69) and for vaginal discharge (9).

In Table 1, 85 different species were cited, and among them, the most frequent were: *Siparuna guianensis* Aubl. used to ease delivery by Waurá Indians and caboclo river-dwellers (Rodrigues, 2006; Valle, 1973) and contraindicated in pregnancy as quoted by caboclo river-dwellers (Rodrigues, 2006), species *Cymbopogon citratus* (DC.) Stapf, *Eryngium foetidum* L., *Pectis elongata* Kunth, *Zingiber officinale* Roscoe and *Senna alata* (L.) Roxb. are contraindicated during pregnancy as they are used to ease delivery by caboclo river-dwellers (Rodrigues, 2006; Santos et al. 2012), *S. pseudoquina* A. St.-Hil. is used to ease delivery in Brazilian popular medicine (Souza and Felfile, 2006) and it is contraindicated during pregnancy by quilombolas (Rodrigues, 2006), *Hyptidendron canum* (Pohl ex Benth.) Harley is used as an anti-hemorrhagic (postpartum) in Brazilian popular medicine, and according to quilombolas, it is contraindicated during pregnancy (Rodrigues, 2006), and last, *Myrcia bracteata* (Rich.) DC. is indicated by

Table 1
Species indicated for conditions related to maternity.

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Anti-abortive						
Euphorbiaceae	*Maprounea guianensis* Aubl.	Ba	Te	–	Xucuru Indians	Silva and Andrade (1998)
Myrtaceae	*Psidium guajava* L.	Fr	Fe	Or	Caboclo river-dwellers	Santos et al. (2012)
Anti-hemorrhagic (postpartum)						
Amaranthaceae	*Amaranthus viridis* L.	Ro/Le	Te	–	Healers	van den Berg (1982)
Convolvulaceae	*Merremia macrocarpa* Roberty	Ro	Te	–	BPM	Rêgo (1988)
Fabaceae s.l.	*Piptadenia peregrina* (L.) Benth.	Ba	Te	–	Healers	van den Berg and Silva (1988a)
	Stryphnodendron coriaceum Benth.	Ro	Te	–	BPM	Rêgo (1988)
Lamiaceae	*Hyptidendron canum* (Pohl ex Benth.) Harley	Le	–	–	BPM	Vieira and Martins (2000)
	Hyptis suaveolens (L.) Poit.	Le/Fl	Te	–	Healers	van den Berg (1982)
Lecythidaceae	*Cariniana estrellensis* (Raddi) Kuntze	–	–	–	BPM	Souza and Felfile (2006)
Malvaceae	*Helicteres pentandra* L.	Ba	Te	Bt	Healers	van den Berg (1982)
Phyllantaceae	*Phyllanthus niruri* L.	Le	Te	–	Healers	van den Berg and Silva (1988a)
Piperaceae	*Piper peltatum* L.	Wp	Te	To	Healers	van den Berg and Silva (1988a,b)
Santalaceae	*Phoradendron bathyoryctum* Eichler	Wp	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Contraindicated for pregnant						
Anacardiaceae	*Anacardium occidentale* L.	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
Annonaceae	*Annona coriacea* Mart.	Ro	Ma	Or	Krahô Indians	Rodrigues (2006)
Apiaceae	*Eryngium foetidum* L.	Wp	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Apocynaceae	*Aspidosperma excelsum* Benth.	Ba	Ma	Or	Caboclo river-dwellers	Rodrigues (2006)
Arecaceae	*Syagrus petraea* (Mart.) Becc.	Fr	Fe	Or	Afro-descendants	Rodrigues (2006)
Asteraceae	*Pectis elongata* Kunth	Ro	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Bignoniaceae	*Tabebuia aurea* (Silva Manso) Benth. & Hook. f. ex S.Moore	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
Boraginaceae	*Cordia insignis* Cham.	Ro	Te	Or	Afro-descendants	Rodrigues (2006)
Connaraceae	*Rourea induta* Planch.	Le/Ro	Te	Or	Krahô Indians	Rodrigues (2006)
Euphorbiaceae	*Julocroton humilis* Müll. Arg.	Ro/Le	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Fabaceae s.l.	*Acosmium dasycarpum* (Vogel) Yakovlev	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
	Copaifera guyanensis Desf.	Se	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
	Crotalaria maypurensis Kunth	Se/Le	Fe	Or	Krahô Indians	Rodrigues (2006)
	Eriosema crinitum (Kunth) G.Don	Ro	Te	Or	Krahô Indians	Rodrigues (2006)
	Hymenaea stigonocarpa Hayne	Ba	Te	Or	Afro-descendants	Rodrigues (2006)
	Martiodendron mediterraneum (Benth.) R.C. Koeppen	Wp	Te	Or	Krahô Indians	Rodrigues (2006)
	Plathymenia reticulata Benth.	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
	Sclerolobium aureum (Tul.) Baill.	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
	Senna alata (L.) Roxb.	Le	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
	Senna occidentalis (L.) Link	Ro	Te	Or	Afro-descendants	Rodrigues (2006)
Humiriaceae	*Duckesia verrucosa* (Ducke) Cuatrec.	Se	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
	Endopleura uchi (Huber) Cuatrec.	Ba	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Lamiaceae	*Hyptidendron canum* (Pohl ex Benth.) Harley	Le	Te	Or	Afro-descendants	Rodrigues (2006)
Loganiaceae	*Strychnos pseudoquina* A. St.-Hil.	Le/Ba	Te	Or	Afro-descendants	Rodrigues (2006)
Loranthaceae	*Psittacanthus robustus* (Mart.) Marloth	Le	Te	Or	Krahô Indians	Rodrigues (2006)
Lythraceae	*Lafoensia pacari* A. St.-Hil.	Ba	Te	Or	Afro-descendants	Rodrigues (2006)
Malvaceae	*Guazuma ulmifolia* Lam.	Ba	Te	Or	Afro-descendants	Rodrigues (2006)
Melastomataceae	*Mouriri pusa* Gardner ex Gardner	Ba/Le	Te	Or	Krahô Indians	Rodrigues (2006)
Moraceae	*Brosimum gaudichaudii* Trécul	Le/Ro	Te	Or	Afro-descendants	Rodrigues (2006)
	Dorstenia asaroides Hook.	Tu	Te	Or	Krahô Indians	Rodrigues (2006)
Myristicaceae	*Virola subsessilis* (Benth.) Warb.	Le/La	Te/Fe	Or	Krahô Indians	Rodrigues (2006)
Oxalidaceae	*Oxalis physocalyx* Zucc. ex Progel	Wp	Ju	Or	Afro-descendants	Rodrigues (2006)
Poaceae	*Cymbopogon citratus* (DC.) Stapf	Ro	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Simaroubaceae	*Simaba suffruticosa* Engl.	Ro	Ma	Or	Krahô Indians	Rodrigues (2006)
Siparunaceae	*Siparuna guianensis* Aubl.	Le	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Zingiberaceae	*Zingiber officinale* Roscoe	Ro	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
"Fallen" uterus						
Piperaceae	*Piper aduncum* L.	Le	Te	Bt/Or	Rural women	Garlet and Irgang (2001)

Table 1 (*continued*)

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
					workers	
To heal the navel of the newborn						
Euphorbiaceae	*Jatropha elliptica* (Pohl) Oken	La	Fe	To	Krahô Indians	Our data
Myrtaceae	*Myrcia bracteata* (Rich.) DC.	Le	Bu	To	Amazon river-dwellers	Amorozo and Gély (1988)
	Psidium myrsinites DC.	La	Fe	To	Krahô Indians	Our data
To increase milk for breastfeeding						
Apiaceae	*Foeniculum vulgare* Mill.	Le	Te	–	Rural women workers	Garlet and Irgang (2001)
Lamiaceae	*Mentha viridis* (L.) L.	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Rosaceae	*Malus domestica* Borkh.	Fr	Te	Or	Rural women workers	Garlet and Irgang (2001)
To easy delivery						
Annonaceae	*Rollinia mucosa* (Jacq.) Baill.	Ba	Te	Or	Amazon river-dwellers	Amorozo and Gély (1988)
Apiaceae	*Eryngium foetidum* L.	Wp	Te	Or	Caboclo river-dwellers	Rodrigues (2006) and Santos et al. (2012)
Apocynaceae	*Himatanthus drasticus* (Mart.) Plumel.	Le /Fl/La	Te	–	BPM	Rêgo (1988)
Asteraceae	*Cacalia mentrasto* Vell.	Le	Te	Bt	Healers	van den Berg (1982)
	Ayapana triplinervis (Vahl) R.M.King & H.Rob.	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
	Pectis elongata Kunth	Ro	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
	Pluchea sagittalis Less.	Le	Te	Or	BPM	Agra et al. (2007)
Boraginaceae	*Cordia bicolor* A.DC.	Le	–	–	Ka'apor Indians	Balée (1986)
Caryocaraceae	*Caryocar brasiliense* A.St.-Hil.	Le	Te	Sb	Healers	van den Berg (1982)
Dioscoreaceae	*Dioscorea amaranthoides* C.Presl	Tu	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Fabaceae s.l.	*Bauhinia cheilantha* (Bong.) Steud.	Ro	Te	Or	Waurá Indians	Valle (1973)
	Senna alata (L.) Roxb.	Le	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Loganiaceae	*Strychnos pseudoquina* A. St.-Hil.	–	–	–	BPM	Souza and Felfile (2006)
Malvaceae	*Melochia tomentosa* L.	Le	Te	Or	BPM	Agra et al. (2007)
Menispermaceae	*Abuta grandifolia* (Mart.) Sandwith	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
	Abuta sandwithiana Krukoff & Barneby	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Poaceae	*Cymbopogon citratus* (DC.) Stapf	Ro	Te	Or	Caboclo river-dwellers	Rodrigues (2006) and Santos et al. (2012)
Siparunaceae	*Siparuna guianensis* Aubl.	Le	–	–	Waurá Indians	Valle (1973)
	Siparuna guianensis Aubl.	Le	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Zingiberaceae	*Zingiber officinale* Roscoe	Ro	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
	Zingiber officinale Roscoe	Tu	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
To determine the sex of the child						
Hypoxidaceae	*Curculigo scorzonerifolia* (Lam.) Baker	Ri	Ma	Or	Yawalapiti Indians	Emmerich and Valle (1991)
Used during pregnancy						
Asteraceae	*Chromolaena squalida* (DC.) R.M.King & H. Rob.	Le	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
	Ichthyothere terminalis (Spreng.) S.F.Blake	Wp	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
	Chrysolaena herbacea (Vell.) H.Rob.	Ro	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Burmanniaceae	*Burmannia bicolor* Mart.	Wp	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Fabaceae s.l.	*Zornia virgata* Moric.	Ro	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Gentianaceae	*Schultesia pohliana* Progel	Wp	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Lamiaceae	*Hyptis crenata* Pohl ex Benth.	Ro	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Lentibulariaceae	*Utricularia subulata* L.	–	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Orchidaceae	*Epistephium lucidum* Cogn.	Le	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Polygalaceae	*Polygala longicaulis* Kunth	St	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
	Polygala monticola Kunth	Wp	–	To	Kayapó Indians	Elisabetsky and Posey (1989)
For "washing" postpartum						
Asteraceae	*Acanthospermum australe* (Loefl.) Kuntze	Wp	–	–	BPM	Vieira and Martins (2000)
Connaraceae	*Connarus perrottetii* (DC.) Planch.	Le/Ba	Te	Sb	Caboclo river-dwellers	Amorozo and Gély (1988)

Table 1 (*continued*)

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Fabaceae s.l.	*Chamaecrista desvauxii* (Collad.) Killip	Fr/Le	Te	Ba	Healers	van den Berg and Silva (1988b)
Lamiaceae	*Hyptis sp.*	Le	Te	Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
Myrtaceae	*Eugenia biflora* (L.) DC.	Le	Te	Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
	Myrcia bracteata (Rich.) DC.	Le	Te	Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
Rutaceae	*Citrus limon* (L.) Osbeck	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
For newborns to start walking faster						
Caryophyllaceae	*Polycarpaea corymbosa* (L.) Lam.	Wp	Bu	To	Krahô Indians	Our data

Ap, aerial part; Ba, bark; Bl, bulbs; BPM, Brazilian Popular Medicine; Bt, bath; Fe, fresh; Fl, flower; Fr, fruit; Ga, gargle; Ju, juice; La, látex; Le, leaf; Ma, macerated; Or, oral; Ro, root; Ri, rizome; Sa, sap; Sb, seat bath; St, Stem; Se, seed; Sy, syrup; Re, resin; Te, tea; To, topic; Tu, tubercle; Wp, whole plant.

Amazon river-dwellers for “washing” postpartum and healing the navel of the newborn (Amorozo and Gély, 1988).

The 85 different species cited for this category belong to 44 botanical families, and the most frequent are: Fabaceae (15 species), Asteraceae (8), and Lamiaceae (5). The most exclusively used part of the plants are the leaves (27.6%), while the most commonly used preparation is tea (80.0%) and oral administration (81.48%). The culture that mentioned a larger number of plants related to motherhood was the Kayapó Indians.

For Table 2, 87 different plant species were mentioned, distributed into 46 families, and the most frequent were: Fabaceae, Asteraceae and Apocynaceae with 12, 10 and 5 species, respectively. The most frequent species in this category were: *Calliandra dysantha* Benth. indicated to restore menstrual flux to normal levels by raizeiros (Vila Verde et al., 2003) and in Brazilian popular medicine (Vieira and Martins, 2000), *Passiflora coccinea* Aubl. used as contraceptive by the Yawalapiti (Emmerich and Valle, 1991) and Waurá Indians (Valle, 1973), and also as a contraceptive, *Rodriguezia lanceolata* Ruiz & Pav. is used by the Kayapó (Valle, 1973) and Amazon Indians (Turner, 1965), *Tanacetum vulgare* L. is used by Amazon river-dwellers to restore menstrual flux to normal levels (Amorozo and Gély, 1988) and for menstrual cramps (Garlet and Irgang, 2001). Although flowers, fruits, seeds and barks are also used in some cases, roots and leaves represent the most commonly used parts in this category. For 22.61% of the species, the roots are exclusively adopted, and for 30.95%, the leaves. Tea is the most common mode of preparation (76.92%), and the oral route is the most commonly used (84.48%). For this category it was not possible to establish a specific culture with a greater frequency of ethnopharmacological indication. The so-called "Brazilian popular medicine", as extracted from publications, was the one that most indicated healing plants for the menstrual cycle, with a total of 20 recommendations.

For Table 2, 189 species belonging to 71 botanical families were mentioned, and the most frequent were: Fabaceae (21), Bignoniaceae (18 species) and Asteraceae (17). The most frequent species was *Anacardium occidentale* L. used as an anti-inflammatory for ovaries and/or uterus by Xucuru Indians (Silva and Andrade, 1998), as an abortive by Krahô Indians (Rodrigues, 2006) and for sexual impotence/aphrodisiac by Brazilian popular medicine (Mendes and Carlini, 2007), *Casearia sylvestris* Sw. is adopted as an anti-inflammatory for ovaries and/or uterus in Brazilian popular medicine (Vieira and Martins, 2000), for the treatment of venereal diseases by Xucuru Indians (Silva and Andrade, 1998) and in Brazilian popular medicine (Souza and Felfile, 2006; Vieira and Martins, 2000), *Croton antisyphiliticus* Mart. is used in the treatment of venereal diseases by raizeiros (Vila Verde et al., 2003), by rural workers (Rodrigues and Carvalho, 2001) and in Brazilian popular medicine (Vieira and Martins, 2000), raizeiros also use it for sexual impotence/aphrodisiac (Vila Verde et al., 2003), *Mandevilla velame (A.St.-Hil.) Pichon* is adopted in the treatment of venereal diseases by raizeiros (Vila Verde et al., 2003), by Brazilian popular medicine (Vieira and Martins, 2000), and agricultural workers (Rodrigues and Carvalho, 2001), *Palicourea rigida* Kunth is administered for the treatment of venereal diseases in Brazilian popular medicine, which also places its use as an anti-inflammatory for ovaries and/or uterus (Vieira and Martins, 2000). This indication was also cited by rural workers (Garlet and Irgang, 2001), *S. pseudoquina* A. St.-Hil. is administered for sexual impotence/aphrodisiac by Brazilian popular medicine (Mendes and Carlini, 2007; Souza and Felfile, 2006; Vieira and Martins, 2000) and as an abortive by quilombolas (Rodrigues, 2006), and finally mentioned was *Zeyheria montana* Mart. to treat venereal diseases by rural workers (Rodrigues and Carvalho, 2001) and by Brazilian popular medicine (Souza and Felfile, 2006; Vieira and Martins, 2000). According to the data above, note that this table shows the greatest concordance between species and their uses by different cultures.

As in the categories above, leaves also represent the most consumed part, being exclusively used in the preparation of 24.7% of the species. Oral administration is employed for 85.45% of the preparation mentioned, and tea is the most frequent form (75.29%). As in Table 2, the information presented here does not refer to a specific culture, it has been mentioned in a general way from consulted articles on "Brazilian popular medicine" (120).

In the data collected for this review, the large number of identified species belonging to the families Fabaceae (35) and Asteraceae (25) can be explained by the fact that they have a large number of species, many of which have biological activity (Pinto et al., 2006). They are widely distributed geographically and can be found in both tropical and temperate climates (Bennett and Prance, 2000). Still, the botanical family Asteraceae is present in several regions in Brazil and contributes to the high number of species from the Atlantic Forest (Hanazaki et al., 2000) and Pernambuco’s semi-arid region (Almeida and Albuquerque, 2002).

Among the three categories, the conditions that showed the highest number of indicated species were for the treatment of venereal diseases (69), abortive (54), anti-inflammatory for ovaries and/or uterus (54), to restore menstrual flux to normal levels (44), sexual impotence/aphrodisiacs (42), contraceptive/to avoid pregnancy (23), to ease delivery (21) and to promote fertility (17) (Fig. 1). The highest prevalence of these uses may indicate specific needs of the studied cultures, or an acquired knowledge due to a past necessity conveyed by predecessors. In this aspect it

Table 2
Species indicated for conditions related to menstrual cycle.

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Contraceptive/to avoid pregnancy						
Anacardiaceae	*Anacardium occidentale* L.	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
Annonaceae	*Unonopsis veneficiorum* (Mart.) R.E. Fr.	–	–	–	Makú Indians	Schultes (1979)
Apocynaceae	*Aspidosperma excelsum* Benth.	Ba	Ma	Or	Caboclo river-dwellers	Rodrigues (2006)
	Aspidosperma excelsum Benth.	Ro	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Araceae	*Anthurium uleanum* Engl.	–	–	–	Amazon Indians	Schultes (1979)
	Philodendron dyscarpium R.E.Schult.	–	–	–	Amazon Indians	Schultes (1979)
	Urospatha antisylleptica R.E.Schult.	–	–	–	Amazon Indians	Schultes (1979)
Arecaceae	*Syagrus petraea* (Mart.) Becc.	Fr	Fe	Or	Afro-descendants	Rodrigues (2006)
Bignoniaceae	*Jacaranda copaia* (Aubl.) D.Don	Tu	Ju	Or	Caboclo river-dwellers	Rodrigues (2006)
Cyperaceae	*Rhynchospora cephalotes* (L.) Vahl	Ro	Te	Or	Krahô Indians	Rodrigues (2006)
Fabaceae s.l.	*Eriosema crinitum* (Kunth) G.Don	Ro	Te	Or	Krahô Indians	Rodrigues (2006)
	Hymenaea stigonocarpa Hayne	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
	Sclerolobium aureum (Tul.) Baill.	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
Humiriaceae	*Duckesia verrucosa* (Ducke) Cuatrec.	Se	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
	Schistostemon macrophyllum (Benth.) Cuatrec.	Ro	Ma	Or	Caboclo river-dwellers	Santos et al. (2012)
Melastomataceae	*Mouriri pusa* Gardner ex Gardner	Ba/Le	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Menispermaceae	*Curarea tecunarum* Barneby & Krukoff	Sa	Fe	Or	Dení Indians	Prance (1999)
Orchidaceae	*Rodriguezia lanceolata* Ruiz & Pav.	–	–	–	Kayapó Indians	Turner (1965)
	Rodriguezia lanceolata Ruiz & Pav.	–	Fe	Or/To	Amazon Indians	Turner (1965)
Passifloraceae	*Passiflora coccinea* Aubl.	Ro	Te	Or	Yawalapiti Indians	Emmerich and Valle (1991)
	Passiflora coccinea Aubl.	Ro	Te	Or	Waurá Indians	Valle (1973)
Siparunaceae	*Siparuna brasiliensis* (Spreng.) A. DC.	Ro/Le	Te	Or	Yawalapiti Indians	Emmerich and Valle (1991)
Verbenaceae	*Lippia alba* (Mill.) N.E.Br. ex Britton & P.Wilson	Le+salt	Te	–	Xucuru Indians	Silva and Andrade (1998)
Menopause						
Asteraceae	*Elephantopus mollis* Kunth	Le/Ro	Te	–	Rural women workers	Garlet and Irgang (2001)
Fabaceae s.l.	*Bauhinia forficata* Link	Fr+honey	Te	–	Rural women workers	Garlet and Irgang (2001)
Malpighiaceae	*Camarea affinis* A.St.-Hil.	Ro	–	–	BPM	Vieira and Martins (2000)
Moraceae	*Morus alba* L.	Le	Te	Or	BPM	Calábria et al. (2008)
Vitaceae	*Vitis vinifera* L.	Le	Te	–	Rural women workers	Garlet and Irgang (2001)
Menstrual cramps						
Apiaceae	*Petroselinum crispum* (Mill.) Fuss	Wp	Te	Or	BPM	Calábria et al. (2008)
Arecaceae	*Attalea speciosa* Mart.	Fr	Fe	Or	BPM	Agra et al. (2007)
Asteraceae	*Baccharis dracunculifolia* DC.	Le	Te	–	Rural women workers	Garlet and Irgang (2001)
	Tanacetum parthenium (L.) Sch. Bip.	Ap	Te	–	Rural women workers	Garlet and Irgang (2001)
	Tanacetum vulgare L.	Le	Te	Or	Caboclo river-dwellers	Amorozo and Gély (1988)
	Zinnia elegans L.	Fl	Te	–	Rural women workers	Garlet and Irgang (2001)
Boraginaceae	*Cordia globosa* (Jacq.) Kunth	Le	Te	Or	BPM	Agra et al. (2007)
Fabaceae s.l.	*Mimosa tenuiflora* (Willd.) Poir.	Ba	–	–	Healers	Almeida et al. (2005)
Lamiaceae	*Hyptis mutabilis* (Rich.) Briq.	Le	Te	–	Healers	van den Berg and Silva (1988a)
	Ocimum carnosum (Spreng.) Link & Otto ex Benth.	Le	Te	–	Rural women workers	Garlet and Irgang (2001)
Malvaceae	*Malva parviflora* L.	Le/Ro	Te	To	Rural women workers	Garlet and Irgang (2001)
Oxalidaceae	*Oxalis physocalyx* Zucc. ex Progel	Wp	Te	Bt	Healers	van den Berg (1982)
Phytolaccaceae	*Petiveria alliacea* L.	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Polygalaceae	*Bredemeyera laurifolia* Klotzsch ex A.W.Benn.	Ro	Te	–	Rural women workers	Garlet and Irgang (2001)
Rubiaceae	*Borreria verticillata* (L.) G.Mey.	Ro/Wp	Te	–	Xucuru Indians	Silva and Andrade (1998)
	Guettarda angelica Mart. ex Müll.Arg.	Ro	Te	Or	BPM	Agra et al. (2007)
Rutaceae	*Ruta graveolens* L.	Le	Te	–	Xucuru Indians	Silva and Andrade (1998)
To promote fertility						
Amaranthaceae	*Gomphrena demissa* Mart.	Ro	Te	Or	BPM	Agra et al. (2007)
Amaryllidaceae	*Hippeastrum puniceum* (Lam.) Voss	Ro	Fe	To	Kayapó Indians	Elisabetsky and Posey (1989)

Table 2 (*continued*)

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Apocynaceae	*Mandevilla scabra* (Hoffmanns. ex Roem. & Schult.) K.Schum.	Ro	Fe	To	Kayapó Indians	Elisabetsky and Posey (1989)
	Marsdenia altissima (Jacq.) Dugand	St/Ba	Ma	Or	BPM	Agra et al. (2007)
Euphorbiaceae	*Euphorbia phosphorea* Mart.	Ba	Te	Or	BPM	Mengue et al. (2001)
Hypoxidaceae	*Curculigo scorzonerifolia* (Lam.) Baker	Ri	Ma	Or	Yawalapiti Indians	Emmerich and Valle (1991)
Nyctaginaceae	*Boerhavia coccinea* Mill.	–	–	–	Waurá Indians	Valle (1973)
Polygalaceae	*Bredemeyera laurifolia* Klotzsch ex A.W.Benn.	–	–	–	BPM	Botrel et al. (2006)
Malvaceae	*Helicteres guazumifolia* Kunth	Ro	Fe	To	Kayapó Indians	Elisabetsky and Posey (1989)
To restore menstrual flux to normal levels						
Apocynaceae	*Echites rubrovenosus* Linden	Ro	Te	Or	Healers	van den Berg (1982)
Araliaceae	*Schefflera morototoni* (Aubl.) Maguire, Steyerm. & Frodin	Ro/Ba/Le	Te	–	Kaiowá Indians	Bueno et al. (2005)
Aristolochiaceae	*Aristolochia triangularis* Cham.	St	Te	–	Rural women workers	Garlet and Irgang (2001)
Asteraceae	*Chrysolaena herbacea* (Vell.) H.Rob.	Le	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
	Artemisia absinthium L.	Le	Te	Or	BPM	Mengue et al. (2001)
	Cacalia mentrasto Vell.	Le	Te	Bt	Healers	van den Berg (1982)
	Pterocaulon polystachyum DC.	Le	Te	–	Rural women workers	Garlet and Irgang (2001)
	Tagetes erecta L.	Fl	Te	–	Rain forest dwellers	Di Stasi et al. (2002)
	Tanacetum vulgare L.	Le	Te	Or	Caboclo river-dwellers	Amorozo and Gély (1988)
Bignoniaceae	*Fridericia chica* (Bonpl.) L.G.Lohmann	Le	Te	Or	Caboclo river-dwellers	Amorozo and Gély (1988)
Bixaceae	*Cochlospermum regium* (Schrank) Pilg.	Ro/Ba	–	–	BPM	Vieira and Martins (2000)
Capparaceae	*Cynophalla flexuosa* (L.) J.Presl	Ro	Te/Sy	Or	BPM	Agra et al. (2007)
	Capparis jacobinae Moric. ex Eichler	Ro	Te/Sy	Or	BPM	Agra et al. (2007)
Euphorbiaceae	*Sebastiania brasiliensis* Spreng.	Ba	Te	Or	BPM	Agra et al. (2007)
Fabaceae s.l.	*Bauhinia guianensis* Aubl.	St	Te	To/Or	Kayapó Indians	Elisabetsky and Posey (1989)
	Bowdichia virgilioides Kunth	Wp	Bt	To	Kayapó Indians	Elisabetsky and Posey (1989)
	Calliandra dysantha Benth.	Ro/Fl	Te	–	Healers	Vila Verde et al. (2003)
	Calliandra dysantha Benth.	Ro/Fl	–	–	BPM	Vieira and Martins (2000)
	Senna alexandrina Mill.	Le	Te	Or	Healers	van den Berg and Silva (1988b)
	Chamaecrista desvauxii (Collad.) Killip	Le	Sy	Or	Healers	van den Berg (1982)
	Chamaecrista desvauxii (Collad.) Killip	Wp	–	–	BPM	Vieira and Martins (2000)
	Dipteryx alata Vogel	–	–	–	BPM	Souza and Felfile (2006)
Gentianaceae	*Chelonanthus viridiflorus* (Mart.) Gilg	Ro	Te/Sy	Or	Healers	van den Berg (1982)
Iridaceae	*Trimezia juncifolia* (Klatt) Benth. & Hook.f.	Ro	Te	Or	Healers	van den Berg (1982)
Lamiaceae	*Hyptis crenata* Pohl ex Benth.	Ro	Te	–	Rain forest dwellers	Di Stasi et al. (2002)
	Rosmarinus officinalis L.	Le	Te	–	Xucuru Indians	Silva and Andrade (1998)
Lythraceae	*Rotala ramosior* (L.) Koehne	–	–	–	Healers	Nunes et al. (2003)
Malpighiaceae	*Byrsonima crassifolia* (L.) Kunth	Wp	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
	Callaeum antifebrile (Ruiz ex Griseb.) D.M. Johnson	Le	Te	Or	Caboclo river-dwellers	Amorozo and Gély (1988)
Malvaceae	*Gossypium barbadense* L.	Le	Te	Or	Caboclo river-dweleers	Santos et al. (2012)
	Malva sylvestris L.	Le	Te/Sy	Or	BPM	Rêgo (1988)
	Sida cordifolia L.	Wp	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Moraceae	*Dorstenia asaroides* Hook.	Ro	Te	Or	Healers	van den Berg (1982)
Myrtaceae	*Eugenia dysenterica* DC.	Wp	–	–	BPM	Vieira and Martins (2000)
Portulacaceae	*Portulaca pilosa* L.	Le	Te	Or	Caboclo river-dweleers	Santos et al. (2012)
Rubiaceae	*Coussarea paniculata* (Vahl) Standl.	Wp	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Rutaceae	*Ruta graveolens* L.	Le	Te	Or	Healers	van den Berg and Silva (1988b)
	Ruta graveolens L.	Ap	Te	–	Rural women workers	Garlet and Irgang (2001)
Sapindaceae	*Serjania erecta* Radlk.	Le/Ro	–	–	BPM	Vieira and Martins (2000)
Simaroubaceae	*Quassia amara* L.	Le	Ma	Or	Healers	van den Berg (1982)
	Simaba ferruginea A. St.-Hil.	Le	Ma	Or	Healers	van den Berg (1982)

Ap, aerial part; Ba, bark; Bl, bulbs; BPM, Brazilian Popular Medicine; Bt, bath; Fe, fresh; Fl, flower; Fr, fruit; Ga, gargle; Ju, juice; La, latex; Le, leaf; Ma, macerated; Or, oral; Ro, root; Ri, rizome; Sa, sap; Sb, seat bath; St, Stem; Se, seed; Sy, syrup; Re, resin; Te, tea; To, topic; Tu, tubercle; Wp, whole plant.

emphasizes the limitation of further discussion about data collected in this review, since there is no way to make larger inferences due to the lack of field observations and raw data from the researchers who carried them out.

As seen in Table 4, the bibliographic review showed that of the 19 most indicated species previously cited in this manuscript, only four have ethnobotanical/ethnopharmacological information related to their use by non-Brazilian cultures. Data found showed that almost all statements involve leaves, and teas are the most used, as verified in the present manuscript, and the topical route of administration was the most suitable, followed by oral. The studies reviewed are incomplete and do not present information about

Table 3
Species indicated to other women's health conditions.

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Abortive						
Anacardiaceae	*Anacardium occidentale* L.	Ba	Te	Or	Krahô Indians	Rodrigues (2006)
Apocynaceae	*Aspidosperma excelsum* Benth.	Ba	Ma	Or	Caboclo river-dwellers	Rodrigues (2006)
	Marsdenia altissima (Jacq.) Dugand	Ro	Te	Or	BPM	Agra et al. (2007)
	Schubertia grandiflora Mart.	Tu	Te	Or	BPM	Agra et al. (2007)
	Schubertia multiflora Mart.	Tu	Te	Or	BPM	Agra et al. (2007)
Aristolochiaceae	*Aristolochia claussenii* Duch.	Ro	–	–	BPM	Vieira and Martins (2000)
Asteraceae	*Pluchea sagittalis* Less.	Le	Te	Or	Healers	Pereira et al. (1988)
	Pterocaulon polystachyum DC.	Le	Te	–	Rural women workers	Garlet and Irgang (2001)
	Tanacetum parthenium (L.) Sch. Bip.	Ap	Te	–	Rural women workers	Garlet and Irgang (2001)
	Trixis antimenorrhoea var. *divaricata* (Kunth.) Kuntze	Wp	Te	Or	BPM	Agra et al. (2007)
	Trixis vauthieri DC.	Wp	Te	Or	BPM	Agra et al. (2007)
	Xanthium cavanillesii Schouw ex Didr.	Le	Te	–	Rural women workers	Garlet and Irgang (2001)
Brassicaceae	*Lepidium didymum* L.	Wp	Ma	Or	Rural women workers	Garlet and Irgang (2001)
Clusiaceae	*Symphonia globulifera* L.f.	La	–	–	Ka'apor Indians	Balée (1986)
Connaraceae	*Rourea induta* Planch.	Ro	Ju	Or	Yawalapiti Indians	Emmerich and Valle (1991)
	Rourea induta Planch.	Ro	Te	Or	Krahô Indians	Rodrigues (2006)
Cucurbitaceae	*Cayaponia tayuya* (Vell.) Cogn.	Fr	Te	–	Healers	van den Berg and Silva (1988b)
	Luffa operculata (L.) Cogn.	Fr	Te	Or	BPM	Mengue et al. (2001)
	Momordica charantia L.	Fr	Te	–	Healers	van den Berg and Silva (1988b)
	Momordica charantia L.	St/Le	Te/Ma	Or	BPM	Calábria et al. (2008)
Euphorbiaceae	*Croton cajucara* Benth.	Le	Te	–	Healers	van den Berg and Silva (1988a)
Fabaceae s.l.	*Acosmium dasycarpum* (Vogel) Yakovlev	Ba	Te	Or	Krahô Indians	Rodrigues, (2006)
	Andira anthelmintica Benth.	Se	Te	–	Healers	van den Berg and Silva (1988b)
	Chamaecrista desvauxii (Collad.) Killip	Fr/Le	Te	Bt	Healers	van den Berg and Silva (1988b)
	Copaifera guyanensis Desf.	Se	Te	Or	Caboclo river-dwellers	Rodrigues (2006)
	Eriosema crinitum (Kunth) G.Don	Ro	Te	Or	Krahô Indians	Rodrigues (2006)
	Senna martiana (Benth.) H.S.Irwin & Barneby	Le	Te	Or	BPM	Agra et al. (2007)
	Senna obtusifolia (L.) H.S.Irwin & Barneby	Le	Te	Or	BPM	Agra et al. (2007)
Humiriaceae	*Endopleura uchi* (Huber) Cuatrec.	Ba	Ma/Te	Or	Caboclo river-dwellers	Rodrigues (2006)
Lamiaceae	*Hyptidendron canum* (Pohl ex Benth.) Harley	Le	Te	Or	Afro-descendants	Rodrigues (2006)
	Mentha pulegium L.	Le	Te	–	Rain forest dwellers	Di Stasi et al. (2002)
Lauraceae	*Laurus nobilis* L.	Le	Te	Or	Healers	Pereira et al. (1988)
Loganiaceae	*Strychnos pseudoquina* A. St.-Hil.	Le/Ba	Te	Or	Afro-descendants	Rodrigues (2006)
Loranthaceae	*Psittacanthus robustus* (Mart.) Marloth	Le	Te	Or	Krahô Indians	Rodrigues (2006)
Malvaceae	*Gossypium herbaceum* L.	Le	Te	–	Healers	van den Berg and Silva (1988a)
Meliaceae	*Guarea guidonia* (L.) Sleumer	Ba	Te	Or	BPM	Agra et al. (2007)
Menispermaceae	*Abuta sandwithiana* Krukoff & Barneby	St	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Myristicaceae	*Virola subsessilis* (Benth.) Warb.	Le/La	Te/Fe	Or	Krahô Indians	Rodrigues (2006)
Ochnaceae	*Ouratea margaretae* Sastre	Ro	Ju	Or	Yawalapiti Indians	Emmerich and Valle (1991)
	Sauvagesia erecta L.	Wp	Te	Or	Yawalapiti Indians	Emmerich and Valle (1991)
Opiliaceae	*Agonandra brasiliensis* Miers ex Benth.	Le/Ba	–	–	BPM	Vieira and Martins (2000)
Oxalidaceae	*Oxalis physocalyx* Zucc. ex Progel	Wp	Te	Or	Afro-descendants	Rodrigues (2006)
Passifloraceae	*Piriqueta racemosa* (Jacq.) Sweet	Ro	Te	Or	BPM	Agra et al. (2007)
Phytolaccaceae	*Petiveria alliacea* L.	Ro	Te	Or	BPM	Agra et al. (2007)
Piperaceae	*Piper mikanianum* (Kunth) Steud.	Ap	Ma	To	Rural women workers	Garlet and Irgang (2001)
Rubiaceae	*Coffea arabica* L.	Le	Te	–	Rain forest dwellers	Di Stasi et al. (2002)
	Coutarea hexandra (Jacq.) K.Schum.	Le	Te	–	Xucuru Indians	Silva and Andrade (1998)
Rutaceae	*Ruta graveolens* L.	Le	Te	Or	Healers	Pereira et al. (1988)
	Ruta graveolens L.	Le	Te	–	Healers	van den Berg and Silva (1988a)
	Ruta graveolens L.	Le	Te	–	Rain forest dwellers	Di Stasi et al. (2002)
Scrophulariaceae	*Capraria biflora* L.	Ro	Te	Or	BPM	Agra et al. (2007)
Simaroubaceae	*Simaba suffruticosa* Engl.	Ro	Ma	Or	Krahô Indians	Rodrigues (2006)
Solanaceae	*Brunfelsia uniflora* (Pohl) D.Don	Ro/Ba	Te	Or	BPM	Agra et al. (2007)
	Solanum agrarium Sendtn.	Ro	Te	Or	BPM	Agra et al. (2007)

Table 3 (*continued*)

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Anti-inflammatory for the ovaries and/or uterus						
Acanthaceae	*Ruellia asperula* (Mart. & Nees) Lindau	Le	–	–	Healers	Almeida et al. (2005)
Amaranthaceae	*Gomphrena demissa* Mart.	Ro	Te	Or	BPM	Agra et al. (2007)
	Gomphrena vaga Mart.	Wp	Te	Or	BPM	Agra et al. (2007)
Anacardiaceae	*Anacardium humile* A.St.-Hil.	Le	Te	–	Healers	Vila Verde et al. (2003)
	Anacardium humile A.St.-Hil.	Le	–	–	BPM	Vieira and Martins (2000)
	Anacardium occidentale L.	Le	Te	Or	Xucuru Indians	Silva and Andrade (1998)
	Myracrodruon urundeuva Allemão	Ba	Te/Ma	Or	BPM	Agra et al. (2007)
Apocynaceae	*Aspidosperma nitidum* Benth. ex Mül.Arg.	Ba	Te	–	Healers	van den Berg and Silva (1988a)
Asteraceae	*Achyrocline alata* (Kunth) DC.	–	–	–	Healers	Nunes et al. (2003)
	Arctium lappa L.	Le/Ro	Te	Or	Rural women workers	Garlet and Irgang (2001)
	Porophyllum ruderale (Jacq.) Cass.	Wp	Te	–	Rural women workers	Garlet and Irgang (2001)
	Pseudobrickellia brasiliensis (Spreng.) R.M.King & H.Rob.	Le/Ro	–	–	BPM	Vieira and Martins (2000)
	Vernonanthura ferruginea (Less.) H.Rob.	Le/Ro	–	–	BPM	Vieira and Martins (2000)
Bignoniaceae	*Fridericia chica* (Bonpl.) L.G.Lohmann	Le	Te	–	Healers	van den Berg and Silva (1988a)
	Tabebuia avellanedae Lorentz ex Griseb.	St/Ba	Ma	Or	BPM	Agra et al. (2007)
	Tabebuia impetiginosa (Mart. ex DC.) Standl.	St/Ba	Ma	Or	BPM	Agra et al. (2007)
	Handroanthus serratifolius (Vahl) S.O.Grose	St/Ba	Ma	Or	BPM	Agra et al. (2007)
	Handroanthus spongiosus (Rizzini) S.O.Grose	St/Ba	Ma	Or	BPM	Agra et al. (2007)
	Tabebuia aurea (Silva Manso) Benth. & Hook.f. ex S.Moore	Ba	–	–	Healers	Almeida et al. (2005)
Bixaceae	*Cochlospermum regium* (Schrank) Pilg.	–	–	–	Healers	Nunes et al. (2003)
Celastraceae	*Maytenus ilicifolia* Mart. ex Reissek	Le/Ro	Te	Or	Healers	van den Berg (1982)
	Maytenus rigida Mart.	St/Ba	Te/Ma	Or	BPM	Agra et al. (2007)
Crysobalanaceae	*Licania heteromorpha* Benth.	Ba	Te	Or/Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
Euphorbiaceae	*Aleurites moluccanus* (L.) Willd.	Ro	Te	Or	BPM	Agra et al., (2007)
	Cnidoscolus infestus Pax & K.Hoffm.	Ba	Te	Or	BPM	Agra et al. (2007)
	Cnidoscolus pubescens Pohl	Le	–	–	Healers	Almeida et al. (2005)
	Cnidoscolus quercifolius Pohl	Ba	Te	Or	BPM	Agra et al. (2007)
	Cnidoscolus urens (L.) Arthur	Ba	Te	Or	BPM	Agra et al. (2007)
Fabaceae s.l.	*Campsiandra comosa* var. *laurifolia* (Benth.) Cowan	Ba	Te	–	Healers	van den Berg and Silva (1988a)
	Desmodium adscendens (Sw.) DC.	Wp	–	–	BPM	Vieira and Martins (2000)
	Mimosa pteridifolia Benth.	Le	–	–	BPM	Vieira and Martins (2000)
	Pithecellobium cochliacarpum (Gomes) J.F. Macbr.	Ba	Te	Or	BPM	Agra et al. (2007)
	Stryphnodendron adstringens (Mart.) Coville	–	–	–	Healers	Nunes et al. (2003)
	Stryphnodendron adstringens (Mart.) Coville	Ba	–	–	BPM	Vieira and Martins (2000)
Lecythidaceae	*Cariniana domestica* (Mart.) Miers	Ba	Te	Sb	Healers	van den Berg (1982)
Loasaceae	*Aosa rupestris* (Gardner) Weigend	Ro	Te	Or	BPM	Agra et al. (2007)
Lythraceae	*Punica granatum* L.	Wp	Te	–	Healers	van den Berg and Silva (1988a)
Malpighiaceae	*Camarea affinis* A.St.-Hil.	–	–	–	BPM	Souza and Felfile (2006)
	Camarea affinis A.St.-Hil.	Ro	–	–	BPM	Vieira and Martins (2000)
Meliaceae	*Cedrela odorata* L.	Ba	Te	Or/Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
Nymphaeaceae	*Nymphaea pulchella* DC.	Wp	Te	Or	BPM	Agra et al. (2007)
Papaveraceae	*Argemone mexicana* L.	Le	–	–	Healers	Almeida et al. (2005)
Plantaginaceae	*Plantago australis* Lam.	Le/Wp	Te	Ga	Rural women workers	Garlet and Irgang (2001)
	Plantago australis Lam.	Le/Se	Te	Or	BPM	Calábria et al. (2008)
	Scoparia dulcis L.	Le	Te	Bt	Healers	van den Berg and Silva (1988b)
Polygalaceae	*Polygala paniculata* L.	Ro	Te	–	Rural women workers	Garlet and Irgang (2001)
Rosaceae	*Rosa gallica* L.	Fl	Te	–	Healers	van den Berg and Silva (1988b)
Rubiaceae	*Palicourea rigida* Kunth	Le/Ro/Ba	Te	–	Rural women workers	Garlet and Irgang (2001)
	Palicourea rigida Kunth	Le/Ro	–	–	BPM	Vieira and Martins (2000)
Salicaceae	*Casearia sylvestris* Sw.	Le/Ro	–	–	BPM	Vieira and Martins (2000)
Sapotaceae	*Sideroxylon obtusifolium* (Roem. & Schult.) T.D. Penn.	Ba	–	–	Healers	Almeida et al. (2005)
Smilacaceae	*Smilax japicanga* Griseb.	Ro	–	–	BPM	Vieira and Martins (2000)
Xanthorrhoeaceae	*Aloe succotrina* Lam.	Le	Ju	Or	BPM	Agra et al. (2007)
Olacaceae	*Ximenia americana* L.	Ba	Ma	Or	BPM	Agra et al. (2007)

Table 3 (*continued*)

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Sexual impotence/aphrodisiac						
Amaryllidaceae	*Hippeastrum psittacinum* (Ker Gawl.) Herb.	Bl	Te	Or	BPM	Agra et al. (2007)
Anacardiaceae	*Anacardium occidentale* L.	Fr	Ju	Or	BPM	Mendes and Carlini, (2007)
	Schinopsis brasiliensis Engl.	Ba	–	–	Healers	Almeida et al. (2005)
	Spondias mombin L.	Fr/Ba	Te	Or	BPM	Mendes and Carlini (2007)
Apocynaceae	*Barjonia cymosa* E.Fourn.	Wp	–	–	BPM	Vieira and Martins (2000)
	Mandevilla velutina K.Schum.	Ro	Te	–	Healers	Vila Verde et al. (2003)
Asteraceae	*Baccharis aphylla* (Vell.) DC.	Wp	–	–	BPM	Vieira and Martins (2000)
	Baccharis trimera (Less.) DC.	Wp	Te	Or	BPM	Mendes and Carlini (2007)
Bignoniaceae	*Anemopaegma arvense* (Vell.) Stellfeld ex De Souza	Ro	–	–	BPM	Vieira and Martins (2000)
	Anemopaegma laeve DC.	Ro/Ba	Ma	Or	BPM	Agra et al. (2007)
	Anemopaegma arvense (Vell.) Stellfeld ex De Souza	Ro/Ba/Le	–	–	BPM	Vieira and Martins (2000)
	Tynanthus elegans Miers	Wp	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Tynanthus elegans Miers	Ro	Te	Or	BPM	Mendes and Carlini (2007)
Bixaceae	*Bixa orellana* L.	Se	Fe	Or	BPM	Mendes and Carlini (2007)
Caryocaraceae	*Caryocar brasiliense* A.St.-Hil.	Se	–	–	BPM	Vieira and Martins (2000)
	Caryocar brasiliense A.St.-Hil.	Fr	Fe	Or	BPM	Mendes and Carlini (2007)
Celastraceae	*Maytenus rigida* Mart.	Ba	–	–	Healers	Almeida et al. (2005)
Erythroxylaceae	*Erythroxylum pungens* O.E.Schulz	Ba	Ma	Or	BPM	Agra et al. (2007)
Euphorbiaceae	*Croton antisyphiliticus* Mart.	Ro/Le	Te/Ma	–	Healers	Vila Verde et al. (2003)
Fabaceae s.l.	*Arachis hypogaea* L.	Se	Fe	Or	BPM	Mendes and Carlini (2007)
	Caesalpinia pyramidalis Tul.	Ba	Ma	Or	BPM	Agra et al. (2007)
	Clitoria guianensis (Aubl.) Benth.	Ro	–	–	BPM	Vieira and Martins (2000)
	Clitoria guianensis (Aubl.)Benth.	Ro	Te/Ma	–	Healers	Vila Verde et al. (2003)
	Copaifera langsdorffii Desf.	Ro	–	–	BPM	Vieira and Martins (2000)
	Hymenaea courbaril L.	Ba	Ma	Or	Caboclo river-dwellers	Santos et al. (2012)
	Hymenaea stigonocarpa Hayne	Re, Ba	–	–	BPM	Vieira and Martins (2000)
Lamiaceae	*Hyptidendron canum* (Pohl ex Benth.) Harley	Le	–	–	BPM	Vieira and Martins (2000)
Loganiaceae	*Strychnos pseudoquina* A. St.-Hil.	–	–	–	BPM	Souza and Felfile (2006)
	Strychnos pseudoquina A. St.-Hil.	Ba	–	–	BPM	Vieira and Martins (2000)
	Strychnos pseudoquina A. St.-Hil.	Ba	Te	Or	BPM	Mendes and Carlini (2007)
Malpighiaceae	*Heteropterys tomentosa* A.Juss.	Wp/Ro	Ma	–	Healers	Vila Verde et al. (2003)
	Heteropterys tomentosa A.Juss.	Ro	Ma	–	BPM	Vieira and Martins (2000)
Malvaceae	*Helicteres brevispira* A.Juss.	Le	–	–	BPM	Vieira and Martins (2000)
Moraceae	*Ficus insipida* Willd.	La	Fe	Or	BPM	Mendes and Carlini (2007)
Nyctaginaceae	*Guapira laxiflora* (Choisy) Lundell	Ro	Te	Or	BPM	Agra et al. (2007)
Olacaceae	*Ptychopetalum olacoides* Benth.	Ro/Ba/St	Te/Ma	–	BPM	Mendes and Carlini (2007)
	Ptychopetalum olacoides Benth.	Ro	Te	Or	BPM	Agra et al. (2007)
Passifloraceae	*Turnera diffusa* Willd. ex Schult.	Le/Wp	Te	Or	BPM	Mendes and Carlini (2007)
Rubiaceae	*Genipa americana* L.	Ro/Ba	Te	Or	BPM	Mendes and Carlini (2007)
Sapindaceae	*Paullinia cupana* Kunth	Se	Fe	Or	BPM	Mendes and Carlini (2007)
Selaginellaceae	*Selaginella convoluta* (Arn.) Spring	Wp	Te	Or	BPM	Agra et al. (2007)
Plants to manipulate sexual activities/decrease libido						
Apocynaceae	*Asclepias candida* Vell.	Ro	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Calophyllaceae	*Kielmeyera coriacea* Mart.	Le	Te	Or	BPM	Vieira and Martins (2000)
Lamiaceae	*Amasonia campestris* (Aubl.) Moldenke	Fls	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Loranthaceae	*Phthirusa stelis* (L.) Kuijt	Fl/fruit	Fe	Or	Kayapó Indians	Elisabetsky and Posey (1989)
Polygalaceae	*Polygala longicaulis* Kunth	Wp	Te	Or	Kayapó Indians	Elisabetsky and Posey (1989)
To treat venereal diseases						
Alismataceae	*Echinodorus macrophyllus*[a] (Kunth) Micheli	–	–	–	Healers	Nunes et al. (2003)
Anacardiaceae	*Tapirira guianensis*[a] Aubl.	Ba/Le	Te	–	Rural workers	Rodrigues and Carvalho (2001)
Annonaceae	*Xylopia aromatica* (Lam.) Mart.	fruit	–	–	BPM	Vieira and Martins (2000)
Apocynaceae	*Mandevilla velame* (A.St.-Hil.) Pichon	Le/Ro/La	Te	–	Healers	Vila Verde et al. (2003)
	Mandevilla velame (A.St.-Hil.) Pichon	Ro	–	–	BPM	Vieira and Martins (2000)
	Mandevilla velame[a] (A.St.-Hil.) Pichon	Ro/Wp	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Marsdenia altissima[a] (Jacq.) Dugand	St/Ba	Ma	Or	BPM	Agra et al. (2007)
Asparagaceae	*Herreria salsaparilha*[a] Mart.	Ro	–	–	BPM	Vieira and Martins (2000)
	Herreria salsaparilha[a] Mart.	Ro	Te	–	Rural workers	Rodrigues and Carvalho (2001)
Asteraceae	*Chionolaena capitata* (Baker) S.E.Freire	Ro	Fe	Bt	Healers	van den Berg (1982)
	Cynara scolymus L.	Le	Te/Ma	–	Rural women workers	Garlet and Irgang (2001)
	Mikania smilacina[a] DC.	Wp	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Piptocarpha rotundifolia[a] (Less.) Baker	Le	–	–	BPM	Vieira and Martins (2000)

Table 3 (*continued*)

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
Bignoniaceae	*Anemopaegma arvense* (Vell.) Stellfeld ex De Souza	Le/Ro/St	Te	–	Healers	Vila Verde et al. (2003)
	Anemopaegma arvense (Vell.) Stellfeld ex De Souza	Ro/Ba/Le	–	–	BPM	Vieira and Martins (2000)
	Cybistax antisyphilitica[a] (Mart.) Mart.	Ba	–	–	BPM	Vieira and Martins (2000)
	Jacaranda brasiliana[a] (Lam.) Pers.	Le	–	–	BPM	Vieira and Martins (2000)
	Jacaranda brasiliana[a] (Lam.) Pers.	St/Ba	Te/Ma	Bt	BPM	Agra et al. (2007)
	Jacaranda caroba[a] (Vell.) DC.	Le	Te/Ma	Bt	BPM	Agra et al. (2007)
	Jacaranda caroba[a] (Vell.) DC.	Ba	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Lundia cordata (Vell.) DC.	Ro	Te	–	Xucuru Indians	Silva and Andrade (1998)
	Handroanthus heptaphyllus (Vell.) Mattos	Ba/St	Te	–	Healers	van den Berg (1982)
	Tabebuia ochracea A.H. Gentry	Le	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Tabebuia ochracea A.H. Gentry	Le	–	–	BPM	Vieira and Martins (2000)
	Zeyheria montana[a] Mart.	Ba	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Zeyheria montana[a] Mart.	Ba	–	–	BPM	Vieira and Martins (2000)
	Zeyheria montana[a] Mart.	–	–	–	BPM	Souza and Felfile (2006)
Convolvulaceae	*Ipomoea asarifolia*[a] (Desr.) Roem. & Schult.	Le/Ap	Te	Or	BPM	Agra et al. (2007)
	Ipomoea pes-caprae[a] (L.) R. Br.	Wp	Te	Or	BPM	Agra et al. (2007)
	Operculina hamiltonii[a] (G. Don) D.F. Austin & Staples	Ro	Te	–	Healers	van den Berg and Silva (1988b)
Costaceae	*Costus spiralis*[a] (Jacq.) Roscoe	Ro	Te	–	Healers	van den Berg and Silva (1988b)
Cucurbitaceae	*Cayaponia tayuya*[a] (Vell.) Cogn.	Ro	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Wilbrandia verticillata[a] (Vell.) Cogn.	Tu	Te	Or	BPM	Agra et al. (2007)
Cyperaceae	*Rhynchospora nervosa*[a] (Vahl) Boeckeler	Wp	Te	Or	BPM	Agra et al. (2007)
Euphorbiaceae	*Croton antisyphiliticus*[a] Mart.	Ro/Le	Te/Ma	–	Healers	Vila Verde et al. (2003)
	Croton antisyphiliticus[a] Mart.	Wp	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Croton antisyphiliticus[a] Mart.	Le/Ro	–	–	BPM	Vieira and Martins (2000)
	Jatropha elliptica[a] (Pohl) Oken	Le	Te	–	Healers	van den Berg and Silva (1988b)
	Sebastiania brasiliensis[a] Spreng.	St/Ba	Te	To	BPM	Agra et al. (2007)
Fabaceae s.l.	*Bowdichia nitida*[a] Benth.	Ba	Te	–	Healers	van den Berg and Silva (1988b)
	Indigofera suffruticosa[a] Mill.	Le/Ro	–	–	BPM	Vieira and Martins (2000)
	Anadenanthera peregrina var. *falcata* (Benth.) Altschul	–	–	–	BPM	Souza and Felfile (2006)
Lamiaceae	*Leonotis nepetifolia*[a] (L.) R.Br.	Le	Te	–	Healers	van den Berg and Silva (1988b)
Lauraceae	*Ocotea odorifera*[a] (Vell.) Rohwer	Ro/Ba	–	–	BPM	Vieira and Martins (2000)
Lecythidaceae	*Cariniana estrellensis* (Raddi) Kuntze	–	–	–	BPM	Souza and Felfile (2006)
	Lecythis pisonis[a] Cambess.	Ba	–	–	BPM	Vieira and Martins (2000)
Loganiaceae	*Strychnos atlantica*[a] Krukoff & Barneby	Le/St/Ba	Te/Ma	Or	BPM	Agra et al. (2007)
Malpighiaceae	*Byrsonima sericea*[a] DC.	St/Ba	Te	Or	BPM	Agra et al. (2007)
Malvaceae	*Waltheria indica*[a] L.	Wp	Te	–	Rural workers	Rodrigues and Carvalho (2001)
	Waltheria indica[a] L.	Le	Te	Or	BPM	Agra et al. (2007)
Meliaceae	*Cedrela fissilis* Vell.	Ba	–	–	BPM	Vieira and Martins (2000)
	Cedrela odorata L.	St/Ba	Te	Or	BPM	Agra et al. (2007)
Orchidaceae	*Epistephium sclerophyllum* Lindl.	Ba	–	–	BPM	Vieira and Martins (2000)
Passifloraceae	*Passiflora cincinnata* Mast.	Le	Te	Or	BPM	Agra et al. (2007)
Phyllanthaceae	*Phyllanthus claussenii* Müll.Arg.	Le	Te	Or	BPM	Agra et al. (2007)
Piperaceae	*Peperomia pellucida* (L.) Kunth	Fl	Te	Or	BPM	Agra et al. (2007)
	Pothomorphe umbellata[a] L.	Le	–	–	BPM	Vieira and Martins (2000)
Rubiaceae	*Palicourea rigida*[a] Kunth	Le/Ro	–	–	BPM	Vieira and Martins (2000)
	Rudgea viburnoides[a] (Cham.) Benth.	Le/Ro/Ba	Te	–	Healers	Vila Verde et al. (2003)
	Rudgea viburnoides[a] (Cham.) Benth.	Ro/Ba	–	–	BPM	Vieira and Martins (2000)
	Sabicea cana Hook.f.	Le/Fl/Ro	–	–	BPM	Vieira and Martins (2000)
	Sabicea cana Hook.f.	Ro	Te	–	Rural women workers	Garlet and Irgang (2001)
Salicaceae	*Casearia sylvestris* Sw.	Ba	Ma	–	Xucuru Indians	Silva and Andrade (1998)
	Casearia sylvestris[a] Sw.	Le	–	–	BPM	Vieira and Martins (2000)
	Casearia sylvestris[a] Sw.	–	–	–	BPM	Souza and Felfile (2006)
Smilacaceae	*Smilax brasiliensis*[a] Spreng.	Ro	Te		Rural workers	Rodrigues and Carvalho (2001)
Solanaceae	*Brunfelsia uniflora* (Pohl) D.Don	Ro	Ma	Bt	Healers	van den Berg (1982)
Violaceae	*Anchietea pyrifolia* (Mart.) G.Don	St	Te	–	Healers	van den Berg and Silva (1988b)
Xyridaceae	*Xyris laxifolia* Mart.	Ro	–	–	BPM	Vieira and Martins (2000)

Table 3 (*continued*)

Family	Species	Part used	Mode of preparation	Route	Culture	Ethnobotanical reference
For vaginal discharge						
Apiaceae	*Killinga sp.*	Ro	Te	Or/Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
Apocynaceae	*Himatanthus sucuuba* (Spruce ex Müll. Arg.) Woodson	Ba	Te	Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
	Tabernaemontana flavicans Willd. ex Roem. & Schult.	Ro	Te	Or/Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
Bignoniaceae	*Fridericia chica* (Bonpl.) L.G.Lohmann	Le	Te	Or	Caboclo river-dwellers	Amorozo and Gély (1988)
	Fridericia chica (Bonpl.) L.G.Lohmann.	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
Chrysobalanaceae	*Licania heteromorpha* Benth.	Ba	Te	Or/Sb	Caboclo river-dwellers	Amorozo and Gély (1988)
Nyctaginaceae	*Boerhavia hirsuta* L.	Wp	Te	–	Healers	van den Berg and Silva (1988b)
Passifloraceae	*Passiflora coccinea* Aubl.	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)
	Passiflora foetida L.	Le	Te	Or	Caboclo river-dwellers	Santos et al. (2012)

Ap, aerial part; Ba, bark; Bl, bulbs; BPM, Brazilian Popular Medicine; Bt, bath; Cr, crude; Fe, fresh; Fl, flower; Fr, fruit; Ga, gargle; Ju, juice; La, latex; Le, leaf; Ma, macerated; Or, oral; Re, resin; Ri, rizome; Ro, root; Sa, sap; Sb, seat bath; Se, seed; St, Stem; Sy, syrup; Te, tea; To, topic; Tu, tubercle; Wp, whole plant.

[a] Species indicated specifically for syphilis.

dose and duration of use. Similar lack of data was found in articles consulted for this review. The *S. guianensis* Aubl., species with the greatest number of therapeutic indications among diverse cultures in South America, is used by Afro-Surinamese to cleanse the uterus after childbirth and menstruation, a decoction of crushed leaves with salt is indicated to facilitate labor by Palikur Indians (Grenand et al., 2004), and it is also used as an abortive by the Creóles (Grenand et al., 2004). *C. citratus* (DC.) is indicated to promote lactation and to eliminate postpartum abdominal pain in Nicaragua (Coe, 2008). *E. foetidum* L. in Trinidad and Tobago is used to remove placenta and shorten labor (Lans, 2007). *T. vulgare* L. is used in Portugal for menstrual regulation (Neves et al., 2009).

Lack of information indicates that the methodologies in the reviewed studies are many times outdated and the information presented is not complete. Posology, geographic coordinates, mode of preparation and practices performed by folk medicine could have been further explored, which suggests the need of deeper exploration into these aspects. Also, similarities of use by other cultures, as seen in Table 4, highlights the possible correlation between ethno-medicinal uses and pharmacological activities, underlying how these compounds are promising candidates.

Collected data of plants contraindicated during pregnancy (37), contraceptive (23), abortive (54) and delivery facilitators (21) insinuate the presence of active toxic compounds in indicated species, which can mean a higher risk to those who administer them, such as uterine contractions, decreased blood flow due to the presence of tannins, which may impair the absorption of proteins and alkaloids, among others (Rodrigues, 2006; Williamson, 2001). As an example, according to the Krahô Indians, plants used for contraception can present reversible or irreversible effects, as is the case with *Aspidosperma excelsum* Benth and *Sclerolobium aureum* (Tul.) Baill., respectively (Rodrigues, 2006).

The pharmacology review presented in Table 5 has proved that out of the 19 studied plants, 25% have pharmacological effects that could explain their indicated use by Brazilian cultures; these matches were signalized in the table. Pharmacological studies described in this table are insufficient to promote inferences about validation of ethnobotanical/ethnopharmacological data, since many of the plants have not been tested for uses indicated by folk medicine. A higher number of studies regarding exotic species compared to native ones were also observed. If we consider the fact that 85% of these 19 species are native to Brazilian flora, and that few studies have been published about them, efforts should be made to encourage studies related to these plants.

The safety and toxicological aspects review of the 19 most indicated plants permitted the elaboration of Table 6. According to the studies reviewed, only eight (42.1%) of them have toxicological information in scientific literature, and only 2 (10.5%) contain well-desribed adverse reactions, *C. citratus* (DC.) Stapf (16 reports) and *Zingiber officinale* Roscoe (18). In general, the medium lethal doses (DL50) found in the plants tested are high, however not all studies specify how extracts were made, what form of administration was used and how the tests were performed, which makes the validation of the data published difficult. Toxicological data found regarding the plants indicated to ease delivery (*C. citratus* (DC.) Stapf, *S. alata* (L.) Roxb., *S. pseudoquina* A. St.-Hil., *Zingiber officinale* Roscoe) and abortives (*A. occidentale* L.) do not match these descriptions, therefore further studies should focus on the assessment of these effects. Lack of safety information about species surveyed is evident and the data published is insufficient to ensure the safety of informal preparations.

Studies about this theme in other countries target some specific cultures (Adnan et al., 2015; Bourdy and Walter, 1992; Lamxay et al., 2011; Michel et al., 2012; Ong and Kim, 2015; Razafindraibe et al., 2013; Shah et al., 2013; Srithi et al., 2012; van der Kooi and Theobald, 2006), or specific conditions (Malan and Neuba, 2011; Telefo et al., 2011), which permits a better definition of held practices, whether ritualistic (Lamxay et al., 2011), plantation and collection (Shah et al., 2013), which might facilitate the understanding of how certain traditional remedies act in the context that their use is inserted. However, the reviewed studies (de Boer and Cotingting, 2014; Njamen et al., 2013; Torri, 2013) are able to draw a parallel between the indications of the same plant by diverse cultures, emphasizing the level of consensus among different people regarding the use of these species, and permitting a further compilation of medicinal plants used globally (de Boer and Cotingting, 2014).

The scarce information published about Brazilian cultures compared to Asian cultures suggests a noticeable knowledge gap in these practices. This frame may be explained by the fact that

Table 4
Ethnobotanical/ethnopharmacological studies mentioning uses related to women's health conditions by non-Brazilian cultures for the 19 most cited species of this review.

Species	Ethnopharmacological uses mentioned in this review	Ethnopharmacological uses mentioned by other cultures in the world (Reference)	Part used	Mode of preparation	Route	Culture	Dose	Duration of use
Cymbopogon citratus (DC.) Stapf	To ease delivery	To promote lactation; to eliminate postpartum abdominal pain (Coe, 2008)	Leaves	Infusion	Oral	Nicaragua	NDF	NDF
Eryngium foetidum L.[a]	To ease delivery	To eliminate postpartum abdominal pain, vaginal infections (Coe, 2008)	Leaves	Decoction/ infusion	Oral/bath	Nicaragua	NDF	NDF
		Venereal diseases (Weniger et al., 1982)	NDF	NDF	NDF	NDF	NDF	NDF
		Menstrual pain and unspecified female complaint, for childbirth and infertility, menstrual pain, to remove placenta, shorten labor (Lans, 2007)	NDF	NDF	NDF	Trinidad and Tobago	NDF	NDF
Siparuna guianensis Aubl.[a]	To ease delivery, contraindicated for pregnant	Postpartum (Renner and Hauser, 2005)	Leaves	Decoction	Oral/topic (bath)	Surinamese	NDF	NDF
		Abdominal cramps (Prance, 1972)	Leaves	Tea	NDF	People of Guiana (Amazon)	NDF	NDF
		Herpes (Duke, 2008)	Bark	Heat and pass on local	Topic	Equator (Quechuas)	NDF	NDF
		Aphrodisiacs for both, men and women; to cleanse the uterus after childbirth and menstruation (helps to remove blood clots from uterus and eliminate the foul smell) (van Andel et al., 2008)	Leaves	Decoction	Vaginal steam-bath	Afro-Surinamese	NDF	NDF
		Bath during chidbirth to facilitate labor (Grenand et al., 2004)	Crushed leaves with salt	decoction	Topic	Palikur Indians (French Guiana)	NDF	NDF
		Abortive (Grenand et al., 2004)	Leaves	Tea	–	Creóles (French Guiana)	NDF	NDF
Tanacetum vulgare L.	To restore menstrual flux to normal levels	Emmenagogue (Conway and Slocumb, 1979)	NDF	NDF	NDF	Spanish New Mexicans	NDF	NDF
		Menstrual regulation (Neves et al., 2009)	Leaves	Infusion	NDF	Portugal	NDF	NDF

No data was found to: *Anacardium occidentale* L.[a], *Calliandra dysantha* Benth.[a], *Casearia sylvestris* Sw.[a], *Croton antisyphiliticus* Mart.[a], *Hyptidendron canum* (Pohl ex Benth.) Harley[a], *Mandevilla velame* (A.St.-Hil.) Pichon[a], *Myrcia bracteata* (Rich.) DC.[a], *Palicourea rigida* Kunth[a], *Passiflora coccinea* Aubl.[a], *Pectis elongata* Kunth[a], *Rodriguezia lanceolata* Ruiz & Pav.[a], *Senna alata* (L.) Roxb.[a], *Strychnos pseudoquina* A. St.-Hil.[a], *Zeyheria montana* Mart.[a] and *Zingiber officinale* Roscoe.
NDF: No data found.

[a] Species native of Brazil.

Table 5
Pharmacological aspects of the 19 most indicated species.

Species	Ethnopharmacological uses mentioned in this review	Biological activity/Pharmacological parameters	Organism	Extract/isolated compound	Doses	Reference
Category 1 – Maternity						
Cymbopogon citratus (DC.) Stapf	To ease delivery	Anxiolytic, hypnotic and anticonvulsant	Rats	Essential oil from leaves	0.5 or 1.0 g/kg, via oral by gavage	Blanco et al. (2009)
		Anti-diabetic	Rats		400 mg/kg and 800 mg/kg	Kumar et al. (2013)
		Oral candidiasis in an HIV population	Humans	Infusion of leaves	125 ml of lemon grass infusion, via oral; thereafter drink at least 250 ml twice a day. Treatment period: 10 days.	Wright et al. (2009)
		Anti-inflammatory	Rats	Decoction of leaves	3 ml, via oral	Carbajal et al. (1989)
		Antihypertensive	Rats	Decoction of leaves	1 ml/kg, 2 ml/kg and 3 ml/kg, intravenous	Carbajal et al. (1989)
		Antinociceptive	Rats	Myrcene	Hot plate method [10 and 20 mg/kg, via intraperitonial] and acetic acid-induced writhing test [20 and 40 mg/kg, via subcutaneous]	Rao et al. (1990)
			Rats	Citronellal	200 mg	Quintans-Júnior et al. (2011)
		Hypoglycemic/hypolipidemic	Rats	Aqueous extract of leaves	125–500 mg/kg, daily, via oral, during 42 days	Adeneye and Agbaje (2007)
Eryngium foetidum L.	To ease delivery	Analgesic	Rats	Aqueous extract	200 mg/kg, 400 mg/kg and 800 mg/kg, via oral	Singh et al. (2015)
		Anti-inflammatory	Rats	Decoction of leaves	via oral	Sáenz et al. (1997)
		Anticonvulsant	Rats	Aqueous extract	4.5 mg/kg, via intraperitonial	Roumy et al. (2007)
Hyptidendron canum (Pohl ex Benth.) Harley	Anti-hemorrhagic	No data found				
Myrcia bracteata (Rich.) DC.	For "washing" postpartum and to heal the navel of the newborn	No data found				
Pectis elongata Kunth	To ease delivery	No data found				
Senna alata (L.) Roxb.	To ease delivery	Laxative	Rats	Anthraquinones from leaves	500 mg/kg	Elujoba et al. (1989)
Siparuna guianensis Aubl.	To ease delivery	Choleretic	Rats	Aqueous extract of the leaves	15 mg/kg	Assane et al. (1993)
		Anti-diabetic	Rats	Ethanolic extract of the leaves	100, 200 and 400 mg/kg, via oral	Palanichamy et al. (1988)
Strychnos pseudoquina A. St.-Hil.	To ease delivery	Antiulcer	Rats	Enriched alkaloid fraction (EAF)	250 mg/kg administered via oral once a day for 14 consecutive days	Bonamin et al. (2011)
		Hypoglycemic	Wistar rats	Aqueous extract of bark	600 ml daily, via oral	Honório-França et al. (2008)
		Antiulcerogenic	Rats	Methanolic extract (ME) and its enriched alkaloid fraction (EAF)	250 and 1000 mg/kg, via oral	Silva et al. (2005)
Zingiber officinale Roscoe*	To ease delivery	To prevent gastrointestinal symptoms of motion sickness	Humans	Powdered rhizome	two capsules of 940 mg, via oral	Mowrey and Clayson

		To reduce nausea and vomiting	Humans (60 women after major gynecological surgery) – double-blind, randomised study	Powdered ginger root	1 g, via oral as pre-medication	(1982) Bone et al., (1990)
		Antithrombotic agent	Rats	Aqueous extract of ginger	50 mg/kg and 500 mg/kg, daily for a period of 4 weeks, either via oral or intraperitoneal	Thomson et al. (2002)
		Anti-inflammatory	Rats	Aqueous extract of ginger	50 mg/kg and 500 mg/kg, daily for a period of 4 weeks, either via oral or intraperitoneal	Thomson et al. (2002)
		Hypotensive	Rats	Crude extract	0.3–3.0 mg/kg	Ghayur and Gilani (2005)
		Nephroprotective	Rats	Aqueous ethanol extract of rhizome	200 and 400 mg/kg	Ajith et al. (2008)
		To decrease menstrual bleeding*	Humans (female from 15 to 18 years old)	Dried rhizome capsules	250 mg three times daily starting from the day before menstrual bleeding until the third day of menstrual period (for four consecutive days)	Kashefi et al. (2015)
		Antifilarial	Dogs	Alcoholic extracts of rhizomes	20 subcutaneous injections of 100 mg/kg	Datta and Sukul (1987)
Category 2 – Menstrual cycle						
Calliandra dysantha Benth.	To restore menstrual flux to normal levels	No data found				
Passiflora coccinea Aubl.	Contraceptive	No data found				
Rodriguezia lanceolata Ruiz & Pav.	Contraceptive	No data found				
Tanacetum vulgare L.	To restore menstrual flux to normal levels	Anti-inflammatory	Rats	Chloroform extract of the leaves	15.2 mg/kg, via intraperitoneal	Mordujovich-Buschiazzo et al. (1996)
		Diuretic	Rats	Aqueous extracts of the leaves	Acute and sub-chronic oral administration of 100 mg/kg orally.	Lahlou et al. (2008)
Category 3 – Other conditions						
Anacardium occidentale L.	Anti-inflammatory for the ovaries and/or uterus, abortive, for sexual impotence/aphrodisiac	Anthelmintic	Worms	Alcohol and aqueous extracts from the whole plant	500 mg/ml	Aiswarya et al. (2011)
		Lowered CCl 4-induced serum γ-Glutamyl Transferase , Alanine Amino Transferase and hepatic lipid peroxidation and it potentiated the effect of CCl 4 by increasing serum protein and cholesterol	Rats	Methanolic extract of the leaves	Extract 100 mg/kg was administered via oral for 7 days	Adedosu et al. (2011)
Casearia sylvestris Sw.*	Anti-inflammatory for the ovaries and/or uterus, for the treatment of venereal diseases	Anti-inflammatory* Antiulcerogenic	Rats	Essential oil	125 mg/kg, via oral	Rozza and Pellizzon (2013)
		Antihyperlipidemic activity (decrease total cholesterol, LDL cholesterol, VLDL cholesterol and triglycerides levels)	Rat model of type 1 diabetes	Ethanol extract of dried leaves	300 mg/Kg per 45 days consecutive, daily	Espinosa et al. (2015)
Croton antisyphiliticus Mart.*	For the treatment of venereal diseases, sexual impotence/aphrodisiac	Anti-inflammatory effect by inhibiting the activated leukocytes, exudate concentrations, nitrate/nitrite, and tumor necrosis factor-α interleukin-17 levels*	Female Swiss mice	Hydro-alcoholic extract of the aerial parts	Pre-treatment with extract (25–200 mg/kg) administered intraperitoneally 30 min before pleurisy induction	dos Reis et al. (2014)
Mandevilla velame (A.St.-Hil.) Pichon*	For the treatment of venereal diseases	Anti-inflammatory, antinociceptive and antipyretic*	Mice	Hydro-ethanolic extract of the xylopodium	20 and 200 mg/kg, via oral	Ribeiro et al. (2010)
Palicourea rigida Kunth	For the treatment of venereal diseases, anti-inflammatory for the ovaries and/or uterus	No *in vivo* studies found				
Strychnos pseudoquina A. St.-	Sexual impotence/aphrodisiac, as abortive	See above				

Table 5 (*continued*)

Species	Ethnopharmacological uses mentioned in this review	Biological activity/Pharmacological parameters	Organism	Extract/isolated compound	Doses	Reference
Hil.						
Zeyheria montana Mart.*	For the treatment of venereal diseases	Analgesic and anti-inflammatory*	Wistar albino male rats	Ethanol extract of the leaves	75, 150 and 300 mg/kg body weight	Guenka et al. (2008)
		Anti-inflammatory (lower pulp inflammatory indexes, when compared with the positive control)*	Rats	Ethanolic extract of the leaves	Single dose of ethanolic extract (300 mg/Kg)	Nossa et al. (2013)

The matches between the uses proclaimed by the ethnobotanical/ethnopharmacological studies and pharmacological data have been posted by (*).

traditional medicine systems in some Asian countries such as China (Chang and But, 1986) and India (Kapoor, 1990) are based on natural products, and they have been part of the official medicine in those countries for decades, while in Brazil the National Program for Medicinal Plants and Herbal Medicines was included in SUS only in 2008, counting on 71 species (BRASIL, 2006). According to Gurib-Fakim (2006), approximately half (125,000) of the world's flowering plant species are in the tropical forests and less than 1% of the tropical species have been studied for their pharmaceutical potential. In Brazil, only 0.4% of the 55,000 plant species have been reported (Gurib-Fakim, 2006).

The Brazilian government published, in 2008, a list of 71 plants to be used in SUS, and of these, only 6 species are native and endemic to the Brazilian flora, 23 are native, and most are exotic (42 plants), despite the great effort by ethnobotany and ethnopharmacology to list the endemic species used by native cultures in Brazil. This list was published, seemingly, because more studies on these exotic plants have been developed, or due to political issues, but somehow the government fails to value investments in studies on species of Brazilian flora and culture, which would favor plant uses, considering biome particularities and folk medicine, since they are part of the local belief frameworks which increase treatment adherence by diverse Brazilian cultures.

4. Conclusion

Although feminist movements have triggered the implementation of public policies directed towards women's health, and the number of guidelines aimed at rural and forest women have increased, the lack of studies directed towards these populations and data consistent with the reality jeopardize the execution of these policies and hamper the proper approach to the reality of these cultures.

In this context, the use of medicinal plants cited in this publication and folk practices should be implemented in reports and public policies that reveal the lack of information on therapies targeted towards women's health and abortion methods used by rural and indigenous women, facilitating the formulation of new policies focused on these groups of women, such as the National Comprehensive Care to Women's Health Policy (2004) and the National Comprehensive Health of the Rural and Forest Populations Policy (2013). Still, the risks of plants contraindicated during pregnancy, contraceptives, abortives, delivery facilitators and safety aspects in general should be more deeply explored, aiming at their dissemination by Health Systems among women, through educative material, health fairs and pharmaceutical care. Populations should be aware of the risks, possible negative effects caused by these species of plants and the danger involved in their use, with the intention of preventing damage.

Although it provides evidence for the enrichment of public health policies, we perceive that the content of this manuscript is limited to Brazil and, due to its large size and the complexity of its biomes and cultures, future studies should individualize cultural aspects and plant characteristics, especially chemically, with the aim of developing novel and effective pharmaceutical agents.

Furthermore, such information collaborates with studies directed towards herbal medicine incrementation, since better regulation and safety inspection of these herbal preparations is needed in order to incorporate them into the Unified Health System, recognizing and appreciating popular and traditional knowledge and using them as a way to facilitate access to medicine based on species that are already cultivated, known and used by these populations.

The surveyed species are promising candidates for the development of novel and effective pharmaceutical agents, mainly the

Table 6
Toxicological aspects of the 19 most indicated species.

Species	Ethnopharmacological uses mentioned in this review	DL50 (medium lethal dose)/IC50 (half maximal inhibitory concentration) – (references)	Toxicological studies (references)	Adverse reactions (references)
Category 1 – Maternity				
Cymbopogon citratus (DC.) Stapf	To ease delivery	Tincture of fresh foliage administered orally, by gavage to Swiss albino mice presented DL50 = 460.00 mg/kg (Parra et al., 2001) In vitro test with essential oil showed high toxicity against Chinese Hamster Ovary cells (IC50 = 10.63 μg/mL) and moderate toxicity against human fibroblast cell line 138 (W138) (IC50 = 39.77 μg/mL) (Kpoviessi et al., 2014) Administration of essential oil in male Swiss mice found DL50 to be around 3500 mg/kg (Costa et al., 2011)	No significant changes in gross pathology, body weight, absolute or relative organ weights, histology (brain, heart, kidneys, liver, lungs, stomach, spleen and urinary bladder), urinalysis or clinical biochemistry were observed in mice treated with essential oil (1, 10 or 100 mg/kg) (Costa et al., 2011) Essential oil was given by gavage to Wistar rats for 14 consecutive days. Doses generally higher than 1500 mg/kg body weight caused significant functional damages to stomach and liver of rat (Fandohan et al., 2008).	16 adverse reaction reports in 2003. Three were related to skin, eight to digestive and 4 to central nervous system. Two of them had defined causality, two possible and 12 probable. Regarding severity, 14 were mild and 2 moderate (Milian et al., 2009)
Eryngium foetidum L.	To ease delivery	NDF	NDF	NDF
Hyptidendron canum (Pohl ex Benth.) Harley	Anti-hemorrhagic	NDF	Crude ethanol extract and the hexane, chloroform and ethyl acetate fractions administered through the feed promoted inflammation and/or systemic lesions on the gills of *Oreochromis niloticus* L. (Fiuza et al., 2015) Pancreatic and hepatic alterations, hemorrhagic spots and necroses were observed in *Oreochromis niloticus* L. treated with crude ethanol extract, ethyl acetate, hexanic and chloroform fractions obtained from its leaves administered to the fish orally with their feed. (Fiuza et al., 2009)	NDF
Myrcia bracteata (Rich.) DC.	For "washing" postpartum and to heal the navel of newborn	NDF	NDF	NDF
Pectis elongata Kunth	To ease delivery	NDF	NDF	NDF
Senna alata (L.) Roxb.	To ease delivery	Hydro-ethanolic extract of leaves administered to Swiss mice and Wistar albino rats. T by intragastric gavage showed DL50 = 18.50 g/kg of body weight (Pieme et al., 2006) Tincture of fresh foliage administered orally, by gavage to Swiss albino mice, DL = 1459.32 mg/kg (Parra et al., 2001)	Leaves of *S. alata* can cause marked toxic effects on rats. Also the ethanol extract and compounds isolated from *S. alata* can cause subtle hepatorenal toxicity (Yagi et al., 1998) The plant is able to cause chronic liver injury in rats (Amao et al., 2010)	No data were found to *S. alata*. Althought, female, 37 years old, presented a strong and persistent stomachache, with cramps, after administering *Senna alexandrina*. for constipation. Preparation form: dried leaflet infusion (3min) in boiling water; one tablespoon (about 3g) for one glass (250mL). Duration of use: one glass (250 mL) immediately after preparation, only once. Causality was assessed as probable, severity was mild, it was considered an expected adverse reaction, non-serious (Neto et al., 2014).
Siparuna guianensis Aubl.	To ease delivery	NDF	NDF	NDF
Strychnos pseudoquina A. St.-Hil.	To ease delivery	NDF	Methanol extract of the leaves is mutagenic to the TA98 (−S9) and TA100 (+S9, −S9) strains of Salmonella. *In vivo* tests with crude methanol extract in albino Swiss mice, treated by gavage, induced micronuclei at highest dose, 1800 mg/kg body weight, confirming the mutagenic potential (Santos et al., 2006)	NDF
Zingiber officinale Roscoe	To ease delivery	No mortality occurred when ethanolic and watery extracts were given orally to mice in doses up to 5 g/kg (body weight) (Shalaby and Hamowieh, 2010)	Some minor adverse effects have been associated with the use by humans. In a clinical trial conducted with 12 healthy volunteers, who received ginger orally at a dose of 400 mg (3 times per day for two week), one patient reported mild diarrhea during the first 2 days. Inhalation of dust from	18 adverse reaction reports in 2007. Two were related to skin, six to digestive tract, three to respiratory tract and 5 were general. Six of them had possible causality and 12 probable. Regarding severity, 13 were mild and 5 moderate (Milian et al., 2009)

Table 6 (*continued*)

Species	Ethnopharmacological uses mentioned in this review	DL50 (medium lethal dose)/IC50 (half maximal inhibitory concentration) – (references)	Toxicological studies (references)	Adverse reactions (references)
			ginger may produce IGE-mediated allergy (Chrubasik et al., 2005).	
Category 2 – Menstrual cycle				
Calliandra dysantha Benth.	To restore menstrual flux to normal levels	NDF	NDF	NDF
Passiflora coccinea Aubl.	Contraceptive	NDF	NDF	NDF
Rodriguezia lanceolata Ruiz & Pav.	Contraceptive	NDF	NDF	NDF
Tanacetum vulgare L.	To restore menstrual flux to normal levels	Aqueous extract of leaves administered to mice by oral (gavage) and intraperitoneal via presented DL50=9.9 g/kg and 2.8 g/kg, respectively (Lahlou et al., 2008)	Extract does not appear to have significant toxicity due to its relatively high values of no-observed adverse effect levels (NOAEL) in the acute study in mice, and lack of significant effect on biological and hematological parameters in rats after 90 days of daily doses. There is a wide margin of safety for the therapeutic use of the leaves aqueous extract (Lahlou et al., 2008) Toxicity against *Ixodes ricinus* (Smolarz et al., 2013).	NDF
Category 3 – Other conditions				
Anacardium occidentale L.	Anti-inflammatory for the ovaries and/or uterus, abortive, for sexual impotence/aphrodisiac	Administration via oral of extract to mice had LD 50 of 2.154 g/kg (Okonkwo et al., 2010) The LD50 of the hexane extract, determined in mice after oral administration was 16 g/kg (Tédong et al., 2007)	Hepatotoxic effect (increased the serum levels of alanine aminotransaminase and aspartate aminotransaminase) in mice (Okonkwo et al., 2010) and dogs (de Melo et al., 2006) Anorexia, diarrhea, and syncope in mice with doses higher than 6g/kg (Tédong et al., 2007) Single oral dose of anacardic acid (2000 mg/kg) has not produced biochemical and hematological alterations in BALB/c mice (Carvalho et al., 2011)	NDF
Casearia sylvestris Sw.	Anti-inflammatory for the ovaries and/or uterus, for the treatment of venereal diseases	Hydro-ethanolic extract of leaves administered to Wistar rats showed DL50 higher than 2000 mg/kg (Ameni et al., 2015)	Aqueous extract provoked neurochemical alterations, in cortical membrane preparations, in the purinergic and cholinergic systems of the central nervous system (inhibition of NTPDase-like activity with both, ATP and ADP. inhibition of 5′-nucleotidase activity and Na+/K+-ATPase) (da Silva et al., 2006)	NDF
Croton antisyphiliticus Mart.	for the treatment of venereal diseases, sexual impotence/aphrodisiac	NDF	NDF	NDF
Mandevilla velame (A.St.-Hil.) Pichon	for the treatment of venereal diseases	Hydro-ethanolic extract administered via oral showed low acute toxicity. DL50=4.176 ± 218.5 mg/kg (Ribeiro et al., 2010)	NDF	NDF
Palicourea rigida Kunth	for the treatment of venereal diseases, anti-inflammatory for the ovaries and/or uterus	NDF	NDF	NDF
Strychnos pseudoquina A. St.-Hil.	sexual impotence/aphrodisiac, as abortive	See above		
Zeyheria montana Mart.	for the treatment of venereal diseases	DL50 (at 24 h) was greater than 2000 mg/kg (Guenka et al., 2008)	NDF	NDF

NDF: no data found.

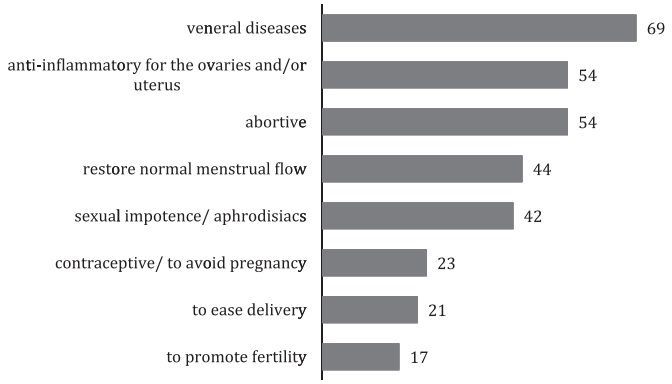

Fig. 1. The eight indications with the highest number of cited species.

native ones, since they reflect regional and ethnic peculiarities, respected beliefs associated to them, and increased adherence to therapeutic treatments.

Withal, studies published about these species, when found, are many times inconclusive, and do not ensure their medicinal use. With the view to certify medicinal uses of these cultures and validate ethnopharmacological practices, further phytochemical, pharmacological and toxicological studies should be conducted, respecting the cultural and biological diversity of the six main Brazilian biomes, and allowing the discovery of pharmacological properties, bioactive constituents, and moreover, adequate posology, manner of use and adverse events.

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Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.jep.2015.12.054.

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