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Frequency of Phytotherapics Prescribed by Doctors in Rondônia, Western Amazônia of Brazil

Carlos Alberto Paraguassú-Chaves[1], Allan Kardec Duailibe Barros Filho[2], Lenita Rodrigues Moreira Dantas[3], Fabrício Moraes de Almeida[4], Christian Diniz Carvalho[5], João Viana Fonseca Neto[6]

[1]PhD in Health Sciences - University of Brasília - UnB, Brazil; PhD in Science - University of Havana (Cuba); Post-Doctor in Health Sciences - UnB and Degli Studi D'Aquila University - IT. Professor at the Federal University of Maranhão – Brazil.
[2]PhD in Information Engineering. Universidade de Nagoya – Japan; Frontier Researcher. The Institute of Physics and Chemistry (RIKEN), Japan. Professor at the Federal University of Maranhão, Brazil.
[3]Bacharel and Specialist in Geography. Bachelor in Law. Researcher at the Higher Institute of Health Sciences and Environment of the Amazon – AICSA.
[4]PhD in Physics (UFC), with post-doctorate in Scientific Regional Development (DCR/CNPq). Researcher of the Doctoral and Master Program in Regional Development and Environment (PGDRA/UNIR). Leader of line 2 - Technological and Systemic Development, and Researcher of GEITEC — Federal University of Rondônia, Brazil.
[5]PhD in Information Engineering. Federal University of Maranhão, Brazil. Researcher at the Federal University of Maranhão, Brazil.
[6]PhD in Electrica Engineering. Federal University of Paraíba, Brazil. Professor at the Federal University of Maranhão, Brazil.

***Abstract*— Objective:** *to analyze the frequency of herbal medicines prescribed by doctors based on records of manipulation pharmacies in the period of 4 (four) years.* **Methods:** *this is a descriptive study with a quantitative approach, with retrospective and cross-sectional data, from the collection of information in an electronic registry of manipulation pharmacy in a context of the State of Rondônia, in 4 (four) Amazonian municipalities, subspace 2 (two) from Rondônia - Western Amazon, according to the spatial model of Paraguassú-Chaves [14].* **Results:** *In the first stage of the research (2015 and 2016) 5.576 were prescribed and in the second stage (2017 and 2018) 7.600, with an increase of 2.024 prescriptions. The phytotherapics with the highest frequency were sine (21.07%), ginkgo biloba (14.9%), kava-kava (14.20%) and sacred cascara (12.62%). In general, the senna and the sacred cascara indicate the population's search for weight loss products, kava-kava to combat insomnia, nervous tension, agitation, distress problems or everyday malaise, ginkgo biloba to combat general circulatory problems and peripheral circulatory disorders (intermittent claudication) and cerebral vascular insufficiency. The general practitioner (general practitioner) with 36%, gastroenterologist 21%, gynecologist-obstetrics 11%, urologist 9.7%, angiologist and vascular surgeon 9% and cardiologist with 5.8% were the professionals in the medical specialties who prescribed the most. Of the medical prescriptions of the general clinical specialty, senna with sacred cascara (35%), ginkgo biloba (20%) and dry senna extract (17%) stand out. Of gastroenterology, 77% correspond to glucomannan, garcinia cambogia. Of the gynecology-obstetrics, isoflavones 40% (26%), senna (20%), combination of kava-kava, isoflavones and senna (17.6%) and ginkgo biloba (14%). From urology, senna dry extract (63%), of the specialty angiology and vascular surgery 57% of horse chestnut and 42% of ginkgo biloba. Cardiology stands out with 88% ginkgo biloba recipes out of the total recipes prepared by doctors specializing in this area.* **Conclusions:** *the consumption of herbal medicines has increased significantly in the last years of the research in the cities of Ariquemes, Jaru, Ouro Preto do Oeste and Ji-Paraná, in Rondônia, Western Amazon, Brazil. Among the possible reasons for the increase in the consumption of herbal medicines are the search to find an alternative to synthetic medicines, the advances in the scientific area that allowed the development of herbal medicines known to be safe and effective, and the trend of the population, for less aggressive therapies intended for care primary health care.*

***Keywords*— Phytotherapics. Doctor's prescription. Rondônia. Western Amazon.**

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I. INTRODUCTION

Phytotherapics are defined as products derived from plants used for medicinal purposes and to promote health [1]. They are considered natural, but not necessarily innocuous. For the Health Surveillance Secretariat of the National Health Surveillance Agency of Brazil - ANVISA, herbal medicine is any medicine technically obtained and elaborated, using only vegetable raw materials for prophylactic, curative or diagnostic purposes, with benefit for the user [2]; [3]. According to Brazil [4] herbal medicine is the product obtained from active vegetable raw material, except for isolated substances, with prophylactic, curative or palliative purposes, including herbal medicine and traditional herbal medicine, and it can be simple, when the asset comes from a only medicinal plant species, or compound, when the asset comes from more than one plant species. Herbal medicines are considered to be those obtained with the exclusive use of active plant raw materials whose safety and effectiveness are based on clinical evidence and which are characterized by the constancy of their quality.

Silva [5] states that ANVISA is the Brazilian national agency whose function is to regulate and supervise the production of herbal medicines. In the opinion of Silva [5], who works as a pharmacist specialized in handling plant products and preparing herbal medicines, some health professionals, when prescribing herbal medicines, say that they do not have side effects. They say that, because they are natural, they have no side effects and also have no adverse reactions, although studies prove that there are undesirable and toxic effects [5]. The main objective of the legislation is to guarantee the quality of the herbal medicine, and this means that all batches must be produced with the same quantities of the active ingredient. This condition assures the patient the consumption of the same active amount, even if using another manufacturer than the usual one. It is this standardization that will be a reference for the quality of the herbal medicine [5].

According to Ferreira [6], medicinal plants can be defined as plants that have biological activity, with one or more active principles useful for human health. The use of medicines, supplements and teas based on these plants is characterized as herbal medicine. Wong [7], states that the use of plants for medicinal purposes is the oldest form of disease treatment. And it announces that the difference between herbal medicines and medicinal plants, according to ANVISA, is in the fact that medicinal plants are those whose purpose is to cure diseases, whereas herbal medicines are those with isolated, defined and standardized substances.

Phytotherapy is a form of medicinal therapy that has been growing notably in recent decades. Within this perspective, Brazil was expected to be a privileged nation, considering its extensive and diversified flora, holding approximately one third of the world flora. In addition, there are a large number of research groups in the country that have contributed significantly to the development of the chemistry of natural plant products, chemotaxonomy, pharmacology of natural products and other related areas. However, Brazil does not have a prominent role in the world herbal medicine market, even behind the least technologically developed countries [8].

Phytotherapy is more significant in developed countries, while in developing countries the investment in studies, technologies and research does not receive due investment and, consequently, are considered inexpressive [9].

According to Pinto [10], the World Health Organization (WHO) believes that currently the practice of using medicinal plants is considered the main therapeutic option for approximately 80% of the world population. However, according to Wong [7] many approach phytotherapics as a whole, not distinguishing between the different drugs in this group. However, it is more appropriate to evaluate each herbal medicine with an approach similar to that of synthetic drugs, that is, based on solid scientific evidence, particularly in controlled clinical studies.

The Amazon region, for having a large amount of raw materials for herbal medicines, has aroused the interests of the international pharmaceutical industries [11]. King [11] in “Medicinal chemistry: principles and practice” records his amazement when he asks “we expected Brazil to be privileged, as it has one third of the world's herbal medicine, however we lag behind less developed countries than Brazil”. Brazil is home to approximately 22% of the species of medicinal plants on the planet, which means an unparalleled richness of biodiversity and, consequently, a huge competitive advantage for the country. Considering plant biodiversity, the Amazon Forest holds the largest reserve of medicinal plants in the world [9]. However, according to Paraguassu-Chaves, Batista, Silva Junior [12], although Brazil is considered the world's breadbasket in varieties of plant species, despite increasing research on medicinal plants, more than 90% of the Brazilian flora is still unknown by Brazilian scientific community. Which justifies the vast majority of herbal medicines consumed in Brazil to come from other countries. Everything suggests that public health policies related to herbal medicines are still very modest, almost incipient in Brazil, lack of incentive for

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scientific research and a little more interest and goodwill from research institutions in Brazil.

The National Health Surveillance Agency of Brazil - ANVISA recognizes, among those phytotherapics with the largest number of scientific studies, a list of plant drugs that are allowed to obtain simplified registration by the industry [3], with no need to validate therapeutic indications and safety of use. According to Ribeiro, Leite, Dantas-Barros [13], in "Profile of the use of phytotherapie medicines in communitary pharmacies of Belo Horizonte, under the influence of the national legislation" of the list of herbal medicines sold with and without prescriptions, containing 34 plant species , the majority are exotic plants, that is, those that do not thrive spontaneously in Brazil, originating in other countries, especially in Europe and North America, where local plant species are the target of a greater number of scientific research. To elucidate the statement of the aforementioned authors, it is currently estimated that, in countries like Germany, phytotherapy is the main form of therapeutic approach, while allopathy is in the background. The vast majority of doctors prescribe herbal medicines regularly. As a consequence, sales of this type of medicine grew. In Africa, for example, 80% of the population depends on the use of these drugs, which represent alternatives in view of the high cost of synthetic drugs. France is an example of what happens in Germany, since herbal medicines are predominantly sold in pharmacies.

Recent studies carried out by Silva [5] in this same research region pointed out that the most frequency of the prescribed phytotherapics were cáscara-sagrada (20.64%), senna (18.35%), ginkgo biloba (13.76%), kava-kava (12.39%) and isoflavone (11.47%). The others found, but less frequently, were artichoke, horse chestnut, chitosan, ginseng and valerian.

According to Silva [5], the results found in the municipality of Ariquemes are similar to those found in the municipality of Jaru (both in Rondônia), since again the sacred cascara prevails in the frequency of herbal medicines. The sacred cask, senna, ginkgo biloba and kava-kava represent, in Ariquemes, the total of more than 65% of the frequency of indication for manipulation, but emphasis should also be given to isoflavone, with 11.47% of prevalence (which does not occurred in the other cities of Rondônia surveyed). In his research, Silva [5] proves that the relationship between doctors and handling pharmacies is quite expressive. Of 6.584 prescribed recipes in the period surveyed, 5.136 (78%) herbal medicine recipes were filled with medical prescriptions.

Theoretically, this percentage of manipulation of herbal medicines from medical prescriptions should involve a considerable safety margin, given that a prescription should give the patient a high degree of unity - that is, the patient is treated according to his particularities, and medicines are prescribed according to the specific needs of individuals.

Our concern was to answer the following question: What is the highest frequency of herbal medicines prescribed by medical professionals in the municipalities of Ariquemes, Jaru, Ouro Preto do Oeste and Ji-Paraná, in Rondônia, Western Amazon, from the records of handling pharmacies?

The objective of the research was to analyze the frequencies of medical prescriptions for herbal medicines in a region of the Amazon, based on records of manipulation pharmacy in the period of 4 years.

II. METHODS

Descriptive study with a quantitative approach, with retrospective and cross-sectional data, from data collection and information in an electronic registry of manipulation pharmacy in a context of the State of Rondônia, comprising 4 Amazonian municipalities, subspace 2 of Rondônia - Western Amazon, according to the model of spatiality of Paraguassú-Chaves [14]. The data and information correspond to 2 periods of medical prescriptions. The first period corresponds to the years 2015 and 2016 and the second period 2017 and 2018. The commercial establishments holding the data and information were not cited to preserve the integrity of the source. Data were collected and transformed into information from medical prescriptions in electronic records of 4 handling pharmacies, one pharmacy per municipality.

The 4 manipulation pharmacies surveyed are regulated by ANVISA, the Regional Pharmacy Council and the Resolution of the Collegiate Board - RDC 67/2007. According to Silva [5], this technical regulation establishes the minimum requirements for the exercise of handling activities and magisterial preparations and pharmacy workshops. The sample corresponds to 100% of the prescriptions prescribed by doctors and that were available in the handling pharmacies in the municipalities of Ariquemes, Jaru, Ouro Preto do Oeste and Ji-Paraná, in Rondônia, Western Amazon.

The Authorization Consent Term - TCA was applied to those responsible for pharmacies for the manipulation of databases. The data not filled in correctly in the

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spreadsheets or with some inconsistency were neglected, removed from the statistics due to lack of reliability. This limitation in data collection is very common in the various data entry systems that feed the Unified Health System in Brazil - SUS and private health systems, compromising the veracity of data and information. A situation that deserves very special attention in the management of the Brazilian health system.

The data were organized with the aid of statistics and represented in the form of tables. The tables were separated by municipality according to the prescribed herbal medicines and their frequency. The data referring to medical specialties that prescribed herbal medicines was organized in the form of a table with content of frequencies.

The research project followed the legal precepts recommended by Resolution 196 of the National Health Committee of Brazil - CNS-CONEP. At the Research Ethics Committee of the Faculty of Education and Environment - Faema, an application was made to waive the evaluation of the Research Ethics Committee, as this is na investigation with the exclusive use of a database.

III. RESULTS AND DISCUSSION

3.1 Frequency of herbal medicines prescribed by doctors

In the period of 4 years of study in 4 pharmacies handling herbal medicines, 13.176 prescriptions by doctors were prepared. In the years 2015 and 2016, the first stage of the research, 5.576 prescriptions and 7.600 prescriptions in the years 2017 and 2018. There was an increase of 2.024 prescriptions between the first and the second stage of the research. Yunes, Pedrosa, Cechinel Filho [15] in the study Pharmaceuticals and herbal medicines: the need for the development of the herbal and herbal medicine industry in Brazil, observed an increase in the use of herbal medicines by the Brazilian population. According to these authors, some factors may explain the increase in the use of these drugs, such as the advances in the scientific field that allowed the development of herbal medicines known to be safe and effective, as well as a strong tendency of the population to seek less aggressive therapies intended for care primary health care.

In the municipality of Ariquemes, in 2015 and 2016, 616 were prescribed and in 2017 and 2018, 1.108 herbal prescriptions were prescribed, resulting in a period of 4 years, 1.724 prescriptions prescribed by doctors. The medical prescriptions during the study period were: senna dry extract (30.84%), ginkgo biloba (21.10%), glucomannan, garcinia cambogia dry extract (17.20%), horse chestnut dry extract (10.38%) and to 40% isoflavones (6.81%). The first five products: senna, ginkgo biloba, glucomannan-garcínia cambogia, horse chestnut and isoflanovas, account for more than 86% of the frequency of prescribed herbal medicines, with emphasis on the first two with a frequency above 20% each one. (table 1).

The high frequency of glucomannan, garcinia cambogia and horse chestnut are highlighted only in municipality of Ariquemes. While the 40% isoflavone prescribed in Ariquemes was also only prescribed in the municipality of Jaru (8.05%). Valerian, Asian powder-centella gorse, Long Jack, hamamelles and elderberry (+ hairy vine, dish vine, powdered coceania) were prescribed in negligible frequency, as well as eggplant, green tea and gelatin. The sacred cascara deserves a very special attention for its prescription associated with other herbal medicines and in isolation.

Table 1: Frequency of herbal medicines prescribed in the municipality of Ariquemes.

Phytotherapics	Frequency (%)
Senna dry extract	30.84
Ginkgo biloba	21.10
Glucomannan, Garcinia Cambogia	17.20
Horse chestnut	10.38
40% Isoflavones	6.81
Kava-kava	3.57
Secred Cascara	3.24
Ginseng powder	1.62
Valerian	1.62
Long Jack	0.97
Carqueja powder, Centella asiática powder	0.64
Eggplant	0.62
Green tea	0.32
Hamamelles	0.30
Hairy vine, Dish vine, Cocleania powder	0.30
Gelatine	0.30
Other herbal medicines	0.40
Total: 1.724 prescriptions	**100%**

Source: Manipulation Pharmacy

In the municipality of Jaru, 1,987 were prescribed in 2015 and 2016 and 2,254 in 2017 and 2018, totaling 4,241 medical prescriptions during the study period. The

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sacred cascara (18.31%), senna (17.71%), ginkgo biloba (15.75%), kava-kava (15.44 %%) and the phaseolamine (9.66%), were the most prescribed herbal medicines by doctors in handling pharmacies. (table 2).

The first five products: cáscara-sagrada, senna, ginkgo biloba, kava-kava and phaseolamine, represent 76.87% of the frequency of the prescribed herbal medicines, with emphasis on the first four with a frequency above 15% of prevalence each. Senna and ginkgo biloba continue to be highlighted frequently, as occurred in Ji-Paraná and Ariquemes. The sacred cascara and kava-kava are similar to the frequencies of Ji-Paraná.

Table 2: Frequency of herbal medicines prescribed in the municipality of Jaru.

Phytotherapics	Frequency (%)
Secred Cascara	18.31
Senna	17.71
Ginko biloba	15.75
Kava-kava	15.45
Phaseolamine	9.66
Isoflavone	8.05
Artichoke	4.44
Horse chestnut	4.13
Garsinia Camboja	2.21
Chitosan	1.29
Other herbal medicines fitoterápicos	3.00
Total: 1.724 prescriptions	**100%**

Source: Manipulation Pharmacy

In Ouro Preto do Oeste, 3.681 prescriptions were carried out, of which 1.539 were prescribed in 2015 and 2016 and 2.143 in 2017 and 2018. Senna with (23.26%), kava-kava (19.10%), sacred cascara (12.02%), chitosan (9.94%), ginseng (9.55%) and ginkgo biloba (9.09%) were the most prescribed herbal medicines by medical professionals.

The 5 herbal medicines with the highest amount of prescriptions represent more than 73% of frequency. The data are similar to those found in Ariquemes, Ji-Paraná and Jaru, with emphasis on senna and ginkgo biloba. The sacred cascara and kava-kava are similar to those found in Jaru and Ji-Paraná and chitosan with those found in Ji-Paraná. (table 3).

Table 3: Frequency of Phytotherapics Prescribed in the Municipality of Ouro Preto.

Phytotherapics	Frequency (%)
Senna	23.26
Kava-kava	19.10
Secred Cascara	12.02
Chitosan	9.94
Ginseng	9.55
Ginkgo biloba	9.09
Green tea	6.31
Valerian	4.15
Horse chestnut	2.51
Caseolamine	1.07
Other herbal medicines	3.00
Total: 3.681 prescriptions	**100%**

Source: Manipulation Pharmacy

In Ji-Paraná, 3.530 prescriptions were made during the study period. In the years 2015 and 2016, 1.434 were prescribed and in 2017 and 2018, 3.539 recipes were prescribed. The most prescribed phytotherapics by medical professionals were kava-kava (18.68%), sacred cáscara (16.94%), ginkgo biloba (13.66%), senna (12.48%) and chitosan (11.99%). (table 4).

The first five products account for more than 73% of the frequency of herbal medicines with a medical prescription. Ginkgo biloba and senna, phytotherapics with higher frequencies in Ariquemes also stand out in Ji-Paraná.

Table 4: Frequency of herbal medicines prescribed in the city of Ji-Paraná.

Phytotherapics	Frequency (%)
Kava-kava	18.68
Sagred Cascara	16.94
Ginkgo biloba	13.66
Senna	12.48
Chitosan	11.99
Ginseng powder	8.43
Green tea	4.78
Valerian	4.88
Horse chestnut	3.52

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Caseolamine	2.64
Other herbal medicines	2.00
Total: 3.530 prescriptions	**100%**

Source: Manipulation Pharmacy

In the municipalities of Ariquemes, Jaru, Ouro Preto do Oeste and Ji-Paraná, during the 4 years of research, herbal medicines with the highest average frequencies with medical prescription were senna (21.07%), ginkgo biloba (14.9%), kava-kava (14.20%) and, the sacred cascara (12.62%). (table 5). Similar to the finding by Silva [5], the sacred cascara component of the list of simplified registration of herbal medicines sold without medical prescriptions from ANVISA, in our study an average frequency of 12.62% was found in the four studied Municipalities, among all herbal medicines with prescription doctor.

Table 5: Frequency of the Main Phytotherapics Prescribed in the Municipalities of Jaru, Ouro Preto do Oeste, Ji-Paraná and Ariquemes.

Phytotherapics	**Jaru**	**Ouro Preto**	**Ji-Paraná**	**Ariquemes**	**Frequency Average %**
Senna	17.71	23.26	12.48	30.84	21.07
Ginkgo biloba	15.75	9.09	13.66	21.10	14.90
Kava-kava	15.45	19.10	18.68	3.57	14.20
Sagred Cascara	18.31	12.02	16.94	3.24	12.62
Total	**67.22%**	**63.47%**	**61.76%**	**58.75%**	**62.79%**

Source: Manipulation Pharmacy

Senna, ginkgo biloba, kava-kava and sacred cáscara represent respectively 67.22% of all herbal medicines prescribed by doctors in the municipality of Jaru, 63.47% in Ouro Preto do Oeste, 61.76% in Ji-Paraná and 58.75% in Ariquemes. Sene was responsible for the highest average frequency of herbal medicine prescribed by a doctor with 21.07% of all revenues in the 4 municipalities, with emphasis on the municipalities of Ariquemes with 30.84%, Ouro Preto do Oeste 23.26% and Jaru 17.71%. Ginkgo biloba stands out at 21.10% in Ariquemes and 15.75% in Jaru. The kava-kava presented high frequency in Ouro Preto do Oeste (19.10), Ji-Paraná (18.68%) and Jaru (15.45%), while the sacred cascara was prescribed with high frequency in Jaru (18.31%) and Ji-Paraná (16.94%). These findings are similar to those found by Silva [5] referring to the cáscara-sagrada herbal remedies, senna, ginkgo biloba and kava-kava. Silva [5] also highlights the sacred cascara associated with other herbal medicines, especially senna. Paraguassú-Chaves, Batista, Silva Junior [12] confirm in a study on the use and notification of herbal medicines in Ariquemes, values similar to the findings in this study and those found by Silva [5].

In the study by Silva [5] it was found the association of phytotherapic with phytotherapic with an association of dry extract sene and dry extract extract; Senne dry extract, horse chestnut, kava-kava and ginseng; ginkgo biloba powder and horse chestnut; ginkgo biloba powder and sacred cascara; ginkgo biloba powder and witch hazel; ginkgo biloba 24% and ginseng; and, kava-kava dry extract, senna, valerian, 40% isoflavones and ginseng.

According to Batistuzzo [16] are examples of combinations of herbal and herbal medicines, which, in adequate dosages, have good effects: Ginseng (Panax ginseng) with ginkgo biloba (Ginkgo biloba) and valerian (Valeriana officinalis L) reduce anxiety; Chitosan (Chitosan) with artichoke (Cynara scolymus L) decrease cholesterol absorption; Senna (Senna alexandrina Mill) and sacred cascara (Rhamus purshiana D) are laxatives.

Although they are natural products, the ideal is that such combinations are made by a doctor, so that dosages and combinations are made according to the patient's needs.

In the same way, it warns of incompatible associations, such as horse chestnut (Aesculus hippocastanum) with anticoagulants: increased effects of anticoagulants; Hamamelis (Hamamelis virginiana) with horse chestnut: enhancing the effects of horse chestnut; kava-kava (Piper methysticum) with CNS depressants: increased effects of CNS depressants; chamomile (Matricaria recutita) with anticoagulants: increased effects of anticoagulants; ginkgo biloba (Ginkgo biloba) with anticoagulants: increased effects of anticoagulants; ginseng (Panax quinquefolius) associated with some hypoglycemic substances: increased effects of hypoglycemic agents; ACE inhibitors: production of toxic effects.

Alexandre [17] conducting a study on the frequency of herbal medicines found in Santa Catarina, the herbal

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medicines ginkgo biloba, kava-kava, valerian, horse chestnut, hypericum, artichoke, ginseng and passion fruit, as the most frequent. Sparreboom et al [18] confirm that most commercialized herbal medicines are basically made with ginkgo biloba, kava-kava, horse chestnut, valerian, artichoke, hypericum, ginseng and passion fruit. For Alexandre [17] this prevalence does not depend on the region of the country.

Glucomannan-garcínia cambogia and horse chestnut of significant frequencies in the municipality of Ariquemes have not been prescribed prominently in other municipalities in this region of the Amazon, nor in previous studies. One of the hypotheses to clarify the significant frequency of glucomannan-garcinia cambogia in Ariquemes handling pharmacy is associated with the professional medical prescriber [12].

The glucomannan-garcínia cambogia composition demonstrates the demand for slimming product, since (Garcinia cambodia) has the action of naturally causing weight loss. According to Batistuzzo [16], its extract is a product based on Garcínia cambogia, a plant traditionally used by Indians to facilitate digestion after meals. It has as its active ingredient calcium hydroxycitrate (stable form of AHC), a substance chemically similar to citric acid found in oranges and other citrus fruits. Inhibits the formation of fat in the body. Also according to Batistuzzo [16], it controls the desire to eat sweets, if 500 mg is used, divided into three times a day. Its therapeutic indication is a potent slimming and natural hunger inhibitor, which has no action on the central nervous system. Therefore, there is a reduction in the formation of body fat, and the reduction is greater in the synthesis of cholesterol and triglycerides. Thus, garcinia extract helps the body to remove low-density lipoproteins from the blood (LDL).

Horse chestnut (Aesculus hippocastanum L.), which does not require a medical prescription, suggests the indication in our study in the treatment of varicose veins, microvarices, homoroids, venous stasis edema and in association in the indication of the treatment of capillary fragility [5]. According to Diehm et al [19], the species Aesculus hippocastanum in different clinical studies carried out with extracts of its seeds has demonstrated its venous anti-edema activity in patients with chronic venous insufficiency. Marliére et al [20] agree that in preparations with horse chestnut, their main indication is for the treatment of chronic venous insufficiency (such as varicose veins and hemorrhoids). Studies by Pittler, Ernst [21]; Siebert et al [22] has demonstrated the effectiveness of horse chestnut for the therapeutic indication of varicose veins and hemorrhoids.

Chitosan is an n-acetyl derivative of chitin. It has the action of reducing cholesteral and decreasing body mass. It is a natural slimming and cholesterol-lowering agent. Chitin is a polysaccharide found in the exoskeleton of seafood (such as shrimp and crabs). Because it is water-soluble, it dissolves in the stomach and turns into a gel, which involves the fat ingested and eliminates it through the intestine, resulting in weight loss, by not letting the fat be absorbed. In addition, it inhibits the absorption of harmful cholesterol (LDL) and stimulates HDL, a healthy cholesterol in the body. Helps control high blood pressure and reduces uric acid levels in the blood. It promotes the healing of ulcers and wounds, has antibacterial and anticandidiasis action and prevents irritation in the intestine.

Chitosan acts as an antacid, anti-constipant and increases calcium absorption. Anti-tumor properties have also been reported for him. Chitosan acts as an antacid, anti-constipant and increases calcium absorption. Anti-tumor properties have also been reported for him. The dosage is 250 mg / 4 six times a day. Some people allergic to crustaceans can have certain adverse effects, especially if they are taking high doses [16].

As described, the possibility of associating one herbal medicine with another is very large. In adequate doses and combinations, they bring satisfactory effects; in excess or mismatches, the reverse occurs.

3.2 Therapeutic indication of the most frequent herbal medicines prescribed by doctors

For Silva [5], among the most frequently prescribed phytotherapics, senna and cascara sagrada, indicate the search of the consumer population for weight loss products. Kava-kava is a very effective product against insomnia, nervous tension and agitation, problems of distress or everyday malaise. It is also common to consume products related to circulatory problems, depending on the presence of ginkgo biloba. Among the most indicated phytotherapics such as senna and cascara sagrada associated with senna, they indicate the users' search for a slimming product [5]. The significant frequency of ginkgo biloba is directly related to the search for the consumption of herbal products for circulatory problems. According to Cupp [23], ginkgo biloba is indicated for vertigo and tinnitus (tinnitus), resulting from general circulatory disorders and peripheral circulatory disorders (intermittent claudication) and cerebral vascular insufficiency.

According to WHO [24], Bristish [25], Escop [26], Senna has the therapeutic indication of treating occasional constipation. Ortiz [27] conducted a clinical study with 21 patients, aged between 19 and 85 years, with an average of

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38 years. The follow-up time for constipation ranged from 3 to 80 months, with an average of 33 months. For this study, a standardized extract of Senna alexandrina was used. Most patients (81%) responded quickly to treatment with just one pill of the herbal medicine and, on average, less than one pill per day was needed during the 28-day observation period to ensure normal defecation rate.

Sá [28] conducted clinical research with 34 patients from a gynecological clinic, most of them pregnant, aged 18 to 62 years. The patients underwent oral treatment with jelly produced with Senna alexandrina leaves for three weeks, with the dose of a teaspoon at night, before sleeping. Patients were evaluated by comparing the evolution of variables such as time to defecate, number of bowel movements per week, presence of gases, quality of stools and feeling of total emptying of the rectum after evacuation, recorded before (one week of observation) and after treatment. All variables evolved significantly favorably. In the overall assessment of efficacy, the results were considered satisfactory in 88.2% of the cases in the opinion of the physician and in 82.3% of the cases in the opinion of the patients.

Leng-Peschlow [29] when carrying out non-clinical pharmacological tests with senna, states that "the effect of Senna alexandrina extract is related to anthraquinone derivatives, sinesides A and B. In a study carried out with sinesides A and B in animals, substances that are found in Senna alexandrina extract, it was concluded that after its administration (12.5 - 200 mg / kg) in rats, normal defecation was accelerated in 3–4h and the excretion of soft stools was evident from 4– 5h, reaching its maximum peak after 5–7 hours. In addition, the transit time in the large intestine was dose and time dependent in the treatment with sinesides A and B. A big change was observed in the intestinal transit time. After two hours of substance administration, the transit time went from 6 hours in the control group to 90 minutes in the treated group. The maximum reduction was observed in the treated group after 4 hours, in which the transit time was reduced to 30 minutes with a dose of 50 mg / kg".

According to WHO [24], Escop [26], Alonso [30], Blumenthal [31], Vanaclocha [32], senna is contraindicated for children under 12, pregnant and lactating women and patients with a history of hypersensitivity and allergy to any one of the components of the herbal medicine.

It should not be used in cases of chronic intestinal constipation, according to WHO intestinal disorders, such as intestinal obstruction and stenosis, atony, inflammatory bowel diseases (Crohn's disease, ulcerative colitis, inflammatory colopathies) and abdominal pain, severe dehydration, hemorrhoids, appendicitis, hypokalemia, pelvic inflammatory disease, menstrual period, cystitis, liver, kidney or heart failure [24], [26], [30], [31]. It is also contraindicated for patients with nausea, vomiting or when an undiagnosed acute or chronic symptom is present [24].

Therapeutic indications for ginkgo biloba are the treatment of vertigo and tinnitus (tinitus) resulting from circulatory disorders, peripheral circulatory disorders, such as cramps [33], [34]. Blumenthal [35] in "The American Botanical Council - The ABC Clinical Guide to Herbs" carried out pharmacological clinical trials and 35 studies conducted with ginkgo biloba, including 3,541 participants, in 33 positive effects were found for use in the indications: Alzheimer's disease, dementia, tinnitus, peripheral vascular disease (intermittent claudication), asthma and depression. Van Dongen [36] in the survey "The efficacy of ginkgo for elderly people with dementia and age-associated memory impairment: new results of randomized clinical Trial" had a negative result in dementia and Drew, Davies [37] in "Effectiveness of Ginkgo biloba in treating tinnitus: double-blind, placebo controlled trial "had negative results for tinnitus.

Blumenthal [35] in research using ginkgo biloba to treat dementia due to cardiovascular failure or Alzheimer's found positive results when he focused on treating ginkgo biloba for intermittent claudication. According to Birks, Grimley [38] in "Ginkgo biloba for cognitive impairment and dementia", a meta-analysis study evaluated 33 papers on the effectiveness and tolerability of ginkgo biloba on cognitive impairment and dementia. According to these researchers in general, there were no statistically significant differences between ginkgo biloba and placebo in relation to adverse effects. As for efficacy, it was concluded that there are benefits associated with the use of ginkgo biloba with doses lower than 0.20 g / day for 12 weeks or doses higher than 0.20 g / day for 24 weeks. It was observed with the cognitive parameters, activities of daily living and mood that there is superiority of ginkgo biloba in relation to placebo in the two dosage ranges.

Ribeiro, Leite, Dantas-Barros [13] stratified 120 herbal medicines and observed that gingko biloba was the most sought after vegetable medicine, accounting for 23.4% of those sought and purchased. Ridney, Kimber, Hindmarch [39] point out that the use of ginkgo biloba has been widespread in several countries around the world. Schulz, Hansel, Tyler [40] claim that several clinical studies have shown that ginkgo biloba extract can be used as an effective nootropic agent in the symptomatic treatment of cognitive impairments. However, Birks, Grimlet [38] disagree with some therapeutic indications for ginkgo bilola. They claim that there is no strong scientific

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evidence for its effectiveness in treating dementia and cognitive decline.

Marliére et al [20] in the research "Herbal drug use by elderly people: results from a domiciliary survey in Belo Horizonte (MG), Brazil", found the three most frequent herbal medicines among the elderly. Ginkgo biloba, horse chestnut and soy isoflavones accounted for more than half of the products used, with a great discrepancy between the first and the others. According to the research, the higher frequency of use of ginkgo bilola corroborates the findings of studies conducted in other countries with the elderly population, such as the Brownie study [41]. For Suzuki [42], the greater use of this herbal medicine can be justified by the existence of a large number of scientific studies carried out with standardized extracts of this plant, which has been gaining more and more space in therapy.

WHO [24] in non-clinical trials, the standardized extract of Ginkgo biloba (100 µg / mL) potentiated the contractile effect of norepinephrine. Possibly, the contractile action induced by ginkgo biloba refers to the release of catecholamines from reserves of endogenous tissues, which would be involved with the therapeutic effects observed in humans (for example: improvement of peripheral and cerebral vascular insufficiency). Results suggest that ginkgo biloba has a musculotropic action similar to papaverine, and this activity has been described for the flavonoids quercetin, kaempferol and isorramnetina, isolated from leaves of this species. In vitro studies have demonstrated that ginkgo biloba extracts have free radical scavenging activity and reduce oxidative lipoperoxidation in microsomes of rats and human liver. The extract inhibited the generation of reactive oxygen species in human leukocytes and protected brain tissue from hypoxic damage. Oral administration of ginkgo biloba extract protected mice from cerebral ischemia. Intravenous perfusion of the extract prevented the development of multiple cerebral infarction in dogs containing fragments of clot in the carotid artery. Mice treated with standardized gingko extract (100 mg / kg, orally, 4–8 weeks) showed improvement in memory and learning. Substances present in ginkgo biloba extract are known antagonists of platelet activation factor [43].

Ginkgo biloba is contraindicated for children under 12, pregnant and lactating women and patients with a history of hypersensitivity and allergy to any of the components of the herbal medicine. Patients with coagulopathies or using anticoagulants and antiplatelet agents should be carefully monitored [43].

Studies by Emser, Bartylla [44] "Zur Wirkung von Kava-Extrakt WS 1490 auf das Schlafmuster bei Gesunden" and Warnecke [46] "Psychosomatische Dysfunktionen im weiblichen Klimakterium" conclude that kava-kava (Piper methysticum G. Forst) Indicated for the symptomatic treatment of mild to moderate stages of anxiety and insomnia, in the short term (1-8 weeks of treatment).

WHO [45] in "Guidelines for predicting dietary intake of pesticide residues" concludes through clinical trials that P. methysticum extract is devoid of hypnotic properties as shown in clinical trials accompanied by quantitative EEG. According to WHO [47] in clinical studies on the influence on sleep quality, it was observed that the amount of sleep spindles and the percentage of deep sleep increased, REM sleep did not change, stage 1 sleep and latency of sleep tended to decrease and subjective sleep time increased. The influence of P. methysticum-based herbal medicines on the quality of sleep is not accompanied by a restriction in the ability to react.

Pittler, Ernst [46] in the research "Efficacy of kava extract for treating anxiety: systematic review and meta-analysis" carried out a meta-analysis of three clinical trials using doses of 100 mg, administered three times a day, of the standardized extract of P methysticum WS 1490, corresponding to 210 mg / day of kavalactones, for four, eight and 24 weeks, involving 198 patients, 51% of which were diagnosed using the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM) standard III-R). In the three trials, there were favorable results for the extract of P. methysticum (showing a 10-point reduction on the Hamilton anxiety scale) compared to the placebo, and the meta-analysis of these results showed a significant reduction in the total score of the Hamilton scale in favor of P. methysticum. Brazil [43] presents a meta-analysis study to demonstrate the therapeutic efficacy and safety of standardized kava extracts in the treatment of anxiety, involving 158 patients with non-psychotic anxiety, score 19 on the Hamilton anxiety scale, and who received 300 mg / day of P. methysticum extract (corresponding to 210 mg / day of kavalactones).

Pittler, Ernst [47] in "Kava for treating anxiety - a meta-analysis of randomized trials" carried out a meta-analysis that suggested a significant reduction in the total Hamilton scale score in patients treated with the standardized extract of P. methysticum in relation to those treated with placebo.

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Johnson et al [48] in a double-blind, placebo-controlled study with 29 patients treated for four weeks with 100 mg of kava extract (standardized at 70% kavalactones) three times a day, compared with the placebo group, found the kava group was found to significantly decrease the anxiety symptoms measured on the Hamilton anxiety scale. Kinzler, Kromer, Lehmann [49] in a double-blind, placebo-controlled study with two groups of 20 women, who used the same dosage as the study previously described, concluded that the kava group was effective in reducing anxiety associated with menopause. Lehmann et al [50] claim that kava extracts have been favorably compared to prescription medications, such as anxiolytics and tricyclic antidepressants (often used to treat anxiety disorders), and without the adverse effects commonly reported for these drugs. In studies by Siegers et al [51] the use of Kava did not decrease attention and seems to improve concentration. In two separate studies, oxazepam (anxiolytic medicine) decreased the reaction time, while kava boosted performance.

For the National Health Surveillance Agency of the Ministry of Health of Brazil, kava-kava (Piper methysticum forst) is indicated for anxiety, insomnia, nervous tension and agitation. Its markers are kavapironas and kavalactonas (daily dose of 60-120mg of kavapironas) [2], [3]. It has a tranquilizing and antidepressant action; it is an excellent indication in the treatment of stress and its consequences.

Seitz, Schule, Gleitz [52] in vitro studies (non-clinical trials) claim that there was no significant blocking of serotonin reuptake by kavalactones, however, there was a blockade for norepinephrine by three lactones, describing thus another possible mechanism of action. For WHO [53] in "Assessment of the risk of hepatotoxicity with kava products", in the case of animal models, kava is known to inhibit experimentally induced seizures.

For Brazil [43], kava-kava is contraindicated during pregnancy and lactation, and in patients with endogenous depression or liver disorders. Several cases of liver toxicity have been reported in Europe after using herbal products containing extracts of P. methysticum. It is contraindicated for patients with liver disorders (hepatitis, cirrhosis, jaundice and others) and / or who use drugs that can cause hepatotoxicity, such as acetaminophen, HMG-CoA reductase inhibitors, isoniazid, methotrexate, among others. This herbal medicine is contraindicated for children under 12 years old, and for lactating women.

According to Bedevian [55], the sacred cascara (Rhamnus purshiana DC), Bruneton [56] is indicated for short-term treatment of occasional intestinal constipation. According to WHO [56] in "Monographs on Selected Medicinal Plants", sacred cascara is included in the pharmacotherapeutic group of stimulating or irritant (contact) laxatives. The 1,8-dihydroxyanthracene derivatives trigger laxative effect by two different mechanisms of action: I- stimulation of motility of the large intestine that results in the acceleration of transit in the colon; II - influence on the processes of concomitant secretion by two mechanisms: the inhibition of water and electrolyte absorption (Na +, Cl-) for the colon epithelial cells (anti-absorptive effect) and stimulation of water and electrolyte secretion for the colon lumen (secretagogue effect), resulting in an increase in the concentration of fluid and electrolytes in the colon lumen. Defecation will occur 6-12 hours after the administration of the sacred saccharide, due to the time required for transport to the colon and metabolism of the active substances.

In a study by Gyorgy, Azvedo, Manso [57] "Reactions of inorganic free radicals with liverprotecting drugs" it was demonstrated that the laxative effects of sacred cascara are mainly due to anthraquinone glycosides, cascarosides A-D. After oral administration of sacred saccharide, hydroxyanthracenic glycosides are not absorbed in the upper part of the intestine, but are hydrolyzed in the colon by intestinal bacteria to form pharmacologically active metabolites [43].

For Blumenthal [31] and De Witte [58] these metabolites are partially absorbed in the colon and act as a stimulant and irritant in the gastrointestinal tract. According to De Witte [58], the mechanism of action is twofold. First, there is stimulation of colon motility, resulting in increased propulsion and accelerated transit of feces through the colon (which reduces the absorption of fluid from the fecal mass). Second, there is an increase in paracellular permeability through the colon mucosa, probably due to inhibition of the sodium / potassium transporter adenosine triphosphatase or inhibition of chloride channels. With the increase in permeability there is an increase in the water content in the colon. The laxative effect of the sacred saccharin is generally not seen until 6-8 hours after oral administration. Anthracenic glycosides are predominantly excreted in the faeces, but are also excreted in the urine, producing an orange color; anthraxes and anthranois are excreted in breast milk.

For Brazil [43] the sacred cascara is contraindicated in the following situations: it should not be administered to patients with intestinal obstruction and stenosis, atony, inflammatory colon diseases (ulcerative colitis, irritable bowel syndrome, Crohn's disease), appendicitis, dehydration severe and electrolyte depletion or chronic constipation. According to Brazil [43], the sacred cascara

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is contraindicated in patients with pain, colic, hemorrhoids, nephritis or any symptoms of undiagnosed abdominal disorders, such as pain, nausea or vomiting. According to Blumenthal [31], sacred cascara is contraindicated for children under 10 years old, pregnant and lactating women, and even in cases of liver, kidney and heart failure and patients with a history of hypersensitivity and allergy, it is contraindicated to any of the components of the herbal medicine [44].

For all herbal medicines, adverse effects, drug interactions, precaution in use, time of use, overdose and information on safety and efficacy, such as toxicity, must be observed.

3.3 Medical Specialties and Herbal Medicine Prescriptions

During the study period, doctors prescribed 13,176 herbal remedies. The medical specialties that prescribed the most were the general practitioner with 36% of all medical prescriptions. Then, in descending order, gastroenterologist with 21%, obstetrician-gynecologist with 11%, urologist with 9.7%, angiologist and vascular surgeon with 9% and cardiologist with 5.8% (table 7).

Of the medical prescriptions by the general practitioner, the senna with the sacred cascara stands out with 35% of the prescriptions, followed by ginkgo biloba with approximately 20% and the dry extract senna with 17% of the prescriptions. For the medical specialty of gastroenterology, 21% of the total prescriptions in the period were prescribed and of these 77% correspond to glucomannan, garcinia cambogia. For medical professionals in the specialty of gynecology-obstetrics, 26% were 40% isoflavones, 20% senna, the combination of kava-kava, isoflavones and senene 17.6% and 14% ginkgo biloba. Of the medical specialty of urology, the dry extract senna stands out with 63% of medical referrals. In the specialty of angiology and vascular surgery, 57% of horse chestnut recipes and 42% of ginkgo biloba, respectively.

The cardiology specialty was also registered with 88% ginkgo biloba recipes out of the total recipes prepared by doctors specializing in this area. Other medical specialties that prescribed herbal medicines were the general surgeon, ophthalmology, medical clinic, endocrinology, neurology and other specialties.

In the specific case of the significant frequency of ginkgo biloba, the medical prescriptions of the medical specialty angiology and vascular surgery are directly related to the search for the consumption of herbal products for general circulatory disorders and peripheral circulatory disorders (intermittent claudication), treatment of varicose veins, deep vein thrombosis, vasculitis, treatment of arteries with strictures, dilated arteries and cerebral vascular insufficiency. In this medical specialty (angiology and vascular surgery) the prescriptions of horse chestnut predominated, which does not require the mandatory medical prescription and suggests the indication in the treatment of varicose veins, microvarices, homorroids, edema of venous stasis and in association in the indication of capillary fragility treatment. In this study there is no reference to findings related to cognitive problems.

From the prescriptions of the general practitioner the senna has therapeutic indication for the treatment of occasional intestinal constipation and the sacred cascara is indicated for short-term treatment of occasional intestinal constipation. The general practitioner has indicated ginkgo biloba for the treatment of general circulatory problems. The prescriptions of the composition glucomannan, garcinia cambogia made by the medical specialty of gastroenterology have a direct relationship with the demand for the product to generate weight loss naturally. In the medical specialty of gynecology-obstetrics, therapeutic indications for the treatment of relief of menopausal symptoms, mastalgia and pre-master's syndrome predominated. The prescriptions of kava-kava are more suitable for the symptomatic treatment of mild to moderate stages of anxiety.

The total number of prescriptions by medical professionals is equivalent to approximately 80% of all prescriptions manipulated in the period studied. Reports point to the moment of great impact on the health system, mainly in the municipalities of the interior of the State, with the insertion in the labor market of a large number of recently graduated doctors, which would probably have participation in these herbal prescriptions. Paraguassu-Chaves, Batista, Silva Junior [12] in the research "Use and Notification of Herbal Medicine: Medical Prescription in an Amazonian Subspace" had already called attention to the large number of herbal medicine prescribed by general practitioner.

In a study carried out in the Basic Health Care Units of the Family, in the State of Ceará, over a period of one year, according to Negreiros [59], there was a prevalence of 70% of herbal medicines prescribed by doctors. In the study by Silva, Sousa, Gondim [60] in another municipality in the state of Ceará, adherence and acceptance by health professionals to use herbal medicines was over 90%. In Niterói, Rio de Janeiro, according to Teixeira, Nogueira [61] just over 60% of the population studied used medicinal herbs prescribed by health professionals.

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A situation was evident in this study. In Rondônia, about 90% of the doctors who work as general practitioners are newly graduated doctors and do not yet have a medical specialty, not even a disciplinary or complementary training in phyto-therapy to prescribe herbal medicines safely and with scientific knowledge, because they not there is the discipline of phytotherapy in the curriculum of the 4 medical courses offered in Rondônia. According to Paraguassú-Chaves, Batista, Silva Junior [12] and according to information from professionals in the manipulation laboratories (pharmacies), these recipes are requested by the patients themselves (in addition to the prescription of synthetic and industrialized drugs).

The indicator of herbal medicine recipes should be infinitely lower than that of synthetic medicine recipes (in Porto Velho and in the interior of the state, in the popular saying, "there is a pharmacy on every corner"). The general population is consulted by the general practitioner when it is not a matter of referral or screening (which does not exist in health posts). This is a reality in the Amazon and in other regions of the Brazil. The biggest concern that draws attention concerns side effects and the consequences of drug interactions. Paraguassú-Chaves, Batista, Silva Junior [12], warns of incompatible indications and inadequate recipes.

Table 6: Medical Specialty that Prescribed Phytotherapics.

Medical speciality	**Frequency %**
General clinic	36.03
Gastroenterology	21.10
Obstetrical Gynecology	11.03
Urology	9.74
Angiology and Vascular Surgery	9.09
Cardiology	5.84
Otorhinolaryngology	1.29
General surgeon	0.97
Neurology	0.97
Ophthalmology	0.97
Endocrinology	0.64
Medical clinic	0.32
Orher specialties	1.94
Total	100%

Source: Manipulation Pharmacy

IV. CONCLUSIONS

The consumption of herbal medicines has increased significantly in the last years of the research in the cities of Ariquemes, Jaru, Ouro Preto do Oeste and Ji-Paraná, in Rondônia, Western Amazon, Brazil. mong the possible reasons for the increase in the consumption of herbal medicines are the search to find an alternative to synthetic medicines, the advances in the scientific area that allowed the development of herbal medicines known to be safe and effective, and the trend of the population, for less aggressive therapies intended for care primary health care.

The phytotherapics with the highest average frequencies with a medical prescription were senna (21.07%), ginkgo biloba (14.9%), kava-kava (14.20%) and, the sacred jar (12.62%). In general, senna and sacred cask indicate the population's search for slimming products, kava-kava to combat insomnia, nervous tension, agitation, distress problems or everyday malaise, ginkgo biloba to combat general circulatory problems and peripheral circulatory disorders (intermittent claudication) and cerebral vascular insufficiency. The general practitioner (general practitioner) with 36%, gastroenterologist 21%, gynecologist-obstetrics 11%, urologist 9.7%, angiologist and vascular surgeon 9% and cardiologist with 5.8% were the professionals in the medical specialties who prescribed the most. Of the medical prescriptions of general practice, the senna with the sacred cascara (35%), ginkgo biloba (20%) and the senna dry extract (17%), of the gastroenterology 77% correspond to glucomannan, garcinia cambogia, gynecology -obstetrics, isoflavones 40% (26%), senna (20%), combination of kava-kava, isoflavones and senna (17.6%) and ginkgo biloba (14%), from urology, senna dry extract (63%), of the specialty angiology and vascular surgery 57% of horse chestnut and 42% of ginkgo biloba. Cardiology stands out with 88% ginkgo biloba recipes out of the total recipes prepared by doctors specializing in this area.

The sacred cascara deserves very special attention. In the two study periods, it was prescribed in association with other herbal medicines and in isolation. The association glucomannan-garcínia cambogia demonstrates the demand for weight loss product, since (Garcinia cambodia) has the action of generating weight loss naturally.

The municipalities studied have equivalent preferences for some herbal medicines that can be justified for several reasons and one of them concerns that due to the proximity of the municipalities, a single doctor can prescribe in more than one municipality. One thing was evident, in Rondônia, about 90% of doctors who work as

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general practitioners (general practitioners) are newly graduated doctors and do not yet have a medical specialty, which compromises the efficiency and effectiveness of the prescribed herbal medicines. An alert to possible incompatible indications and inappropriate recipes.

REFERENCES

[1] Bauer BA. Herbal therapy: what a clinician needs to know to counsel patients effectively. Mayo Clin Proc. 2000.

[2] Brasil 2004a. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. RDC n° 48 de 16 de março de 2004. Dispõe sobre o registro de medicamentos fitoterápicos. Diário Oficial, Brasília, 18 de março de 2004. [Links]

[3] Brasil 2004b. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. RE nº 89 de 16 de março de 2004. Determina a publicação da Lista de registro simplificado de fitoterápicos. Diário Oficial, Brasília, 18 de março de 2004. [Links]

[4] Brasil 2014 Resolução de Diretoria Colegiada - RDC nº 26/2014. Dispõe sobre o registro de medicamentos fitoterápicos e o registro e a notificação de produtos tradicionais fitoterápicos. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Brasília, 2014.

[5] Silva SA. Prescrição Médicas da Fitoterapia no Estado de Rondônia: Usos e Notificações. Dissertação de Mestrado. Programa de Pós-Graduação em Ciências da Saúde. Mestrado em Ciências da Saúde. Universidade de Brasília – UnB. Brasília. 2009.

[6] Ferreira S. (Coord.). Medicamentos a partir de plantas medicinais no Brasil. Rio de Janeiro: Academia Brasileira de Ciências, 1998.

[7] Wong AHC, Smith M, Boon HS. Herbal remedies in psychiatric practice. [s. l.]: Arch Gen Psychiatry, 1998.

[8] Yunes RA, Calixto JB. Plantas medicinais sob a ótica da química medicinal moderna: métodos de estudo, fitoterápicos e fitofármacos, biotecnologia, patente. Chapecó: Argos, 2001.

[9] FIEAM — Federação das Indústrias do Estado do Amazonas. Pelo aproveitamento racional das plantas medicinais da Amazônia. In: Anuário da Agricultura Brasileira — AGRIANUAL. São Paulo: FNP Consultoria & Comércio, 2002.

[10] Pinto CA. Produtos naturais: atualidade, desafios e perspectivas. In: Química Nova. [s. l.]: [s. n.], 2002.

[11] King FD. In. Medicinal chemistry: principles and practice. Inglaterra: The Royal Society of Chemistry, 1994.

[12] Paraguassu-Chaves CA, Batista CPS, Silva Junior NP. Uso e Notificação de Fitoterápico: Prescrição Médica em um Subespaço Amazônico – Ariquemes. Revista *Vita et Sanita*. Trindade. 2013. [15].

[13] Ribeiro AQ, Leite JPV, Dantas-Barros AM. Profile of the utilization of phytotherapie medicines in communitary pharmacies of Belo Horizonte, under the influence of the national legislation. Revista Brasileira de Farmacognosia. Vol. 15 nº I João Pessoa. Jan/Mar. 2005. [12].

[14] Paraguassu-Chaves CA. Geografia Medica ou da Saúde – O espaço e saúde na Amazônia Ocidental, Edufro. Porto Velho, 2001. [13].

[15] Yunes RA, Pedrosa RC, Cechinel Filho V 2001. Fármacos e fitoterápicos: a necessidade do desenvolvimento da indústria de fitoterápicos e fitofármacos no Brasil. Quím Nova 24: 147-152. [Links] [14].

[16] Batistuzzo JAO. Formulário médico-farmacêutico. São Paulo: Tecnopress, 2002.

[17] Alexandre RF. (2004) Dissertação de Mestrado apresentada ao Programa de Pós-Graduação em Farmácia/Universidade Federal de Santa Catarina, Florianópolis, SC, Brasil.

[18] Sparreboom A, Cox MC, Acharya MR, Figg WD. (2004) J. Clin. Oncol. 22: 2489-503.

[19] Diehm C, Trampisch HJ, Lange S, Schmidt C 1996. Comparison of leg compression stocking and oral horse-chesnut seed extract therapy in patients with cronic venous insufficiency. Lancet 374: 292-294. [Links]

[20] Marliére LDP, Ribeiro AQ, Brandão MGL, Klein CH, Acurcio FA. Herbal drug use by elderly people: results from a domiciliary survey in Belo Horizonte (MG), Brazil. Revista. Brasileira de Farmacognosia. Vol 18 supp. 0. João Pessoa. Dec. 2008.

[21] Pittler MH, Ernst E 2006. Horse chestnut seed extract for chronic venous insufficiency. Cochrane Database Syst Rev 25: CD003230. [Links]

[22] Siebert U, Brach M, Sroczynski G, Berla K 2002 Efficacy, routine effectiveness, and safety of horsechestnut seed extract in the treatment of chronic venous insufficiency. A meta-analysis of randomized controlled trials and large observational studies. Int Angiol 21: 305-315. [Links]

[23] Cupp MJ. Herbal remedies: adverse effects and drug interac-tions. American Family Physician, march 1, 1999. Disponível em: <http://www.aafp.org/afp/990301ap/1239.html>. Acesso em 14 de Julho de 2019.

[24] WHO. World Health Organization. Monographs on selected medicinal plants. Geneva, Switzerland: World Health Organization, v. 1, p. 241-258, 1999.

[25] Bristish Herbal Medicine Association. Senna alexandrina. British Herbal Pharmacopoeia. 4th ed. Exeter: Biddles Ltda, Guilford and King's Lynn, 1996.

[26] Escop. European Scientific Cooperative on Phytotherapy. Senna alexandrina. Monographs. 2nd ed. Grã – Bretanha: Biddles Ltda, Guilford and King's Lynn, 1997.

[27] Ortiz EL. The Encyclopedia of Herbs, Spices, & Flavorings Hardcover. 1992.

[28] Sá JCB. Efeito laxativo de uma preparação gelatinosa de pó de folhas de sene em pacientes ginecológicos/obstétricos. Folha Méd, v. 108, p. 93-97, 1994.

[29] Leng–Peschlow E. Dual effect of orally administered sennosides on large intestine transit and fluid absorption in the rat. J Pharm Pharmacol, v. 38, p. 606-610, 1986.

[30] Alonso J R. Tratado de Fitomedicina: bases clínicas e farmacológicas. Argentina: Isis Ediciones SRL, 1999.

[31] Blumenthal M. et al. (Ed.). The complete German Commission E monographs. Austin, TX: American Botanical Council, 1998.
[32] Vanaclocha BV. (Ed.). Vademécum de Prescripción: plantas medicinales. 3. ed., Barcelona: Masson, 1998.
[33] Mills S, Bones K. Principles and practice of phytotherapy: modern herbal medicine. Edinburgh: Churchill Livingstone, 2000. 643 p.
[34] Mills S, Bones K. The Essential Guide to Herbal Safety. St Louis: Elsevier, 2005. 684 p.
[35] Blumenthal M. The American Botanical Council – The ABC Clinical Guide to Herbs. Austin, TX: American Botanical Council, 2003.
[36] Van Dongen M. The efficacy of ginkgo for elderly people with dementia and age-associated memory impairment: new results of randomized clinical trial. J Am Geriatr Soc, v. 48, n. 10, p. 1183-1194, 2000.
[37] Drew S, Davies E. Effectiveness of Ginkgo biloba in treating tinnitus: double-blind, placebo controlled trial. BMJ, v. 322, n. 7278, p. 73, 2001.
[38] Birks J, Grimley EJ. Ginkgo biloba for cognitive impairment and dementia. Cochrane Database Syst Rev, v. 21;(1):CD003120, 2009.
[39] Rigney U, Kimber S, Hindmarch I 1999. The effects of acute doses of standardized Ginkgo biloba extract on memory and psychomotor performance in volunteers. Phytother Res 13: 408-415. [Links]
[40] Schulz V, Hansel R, Tyler VE 2002. Fitoterapia racional. 1ª ed. Barueri: Manole, p. 42-56. [Links]
[41] Brownie S 2006. Predictors of dietary and health supplement use in older Australians. Aust J Adv Nurs 23: 26-31. [Links]
[42] Suzuki SF 2002. O mercado de medicamentos fitoterápicos no Brasil. In: Schulz V, Hansel R, Tyler VE. Fitoterapia racional. 1ed. Barueri: Manole, p. 363-369. [Links]
[43] Brasil. Agência Nacional de Vigilância Sanitária - ANVISA. Memento Fitoterápico da Farmacopeia Brasileira - 1ª edição. Brasília. 2016.
[44] Emser W, Bartylla K. Verbesserung der Schlafqualität. Zur Wirkung von Kava-Extrakt WS 1490 auf das Schlafmuster bei Gesunden. Neurologie/Psychiatrie, v. 5, p. 636-642, 1991.
[45] WHO. World Health Organization. Guidelines for predicting dietary intake of pesticide residues (document WHO/FSF/FOS/97.7). 2nd ed. Geneva: World Health Organization, 1997.
[46] Pittler MH, Ernst E. Efficacy of kava extract for treating anxiety: systematic review and meta-analysis. Journal Clinical Psychopharmacology, v. 20, p. 84-89, 2000.
[47] Pittler MH, Ernst E. Kava for treating anxiety - a meta-analysis of randomized trials. Perfusion, v. 15, p. 474-481, 2002.
[48] Johnson D *et al*. Neurophysiologisches Wirkprofil und Verträglichkeit von Kava-Extrakt WS 1490. Eine Pilotstudie mit randomisierter Auswertung. Neurologie/Psychiatrie, v. 5, p. 349-354, 1991.
[49] Kinzler E, Kromer J, Lehmann E. Wirksamkeit eines Kava-Spezialextraktes bei Patienten mit Angst-, Spannungs- und Erregungszuständen nicht-psychotischer Genese. Doppelblind-Studie gegen Plazebo über 4 Wochen. Arzneimittel-Forschung, v. 41, p. 584-588, 1991.
[50] Lehmann E *et al*. Efficacy of a special kava extract (Piper methysticum) in patients with states of anxiety, tension and excitedness of non-mental origin - a double-blind placebo-controlled study of four weeks' treatment. Phytomedicine, v. 3, p. 113-119, 1996.
[51] Siegers SP *et al.* Ergebnisse der Anwendungsbeobachtung L 1090 mit Laitan Kapseln. Ärztliche Forschung, v. 39, p. 6-11, 1992.
[52] Seitz U, Schule A, Gleitz J. [3H]-monoamine uptake inhibition properties of kava pyrones. Planta Med, v. 63, p. 548-549, 1997.
[53] WHO. World Health Organization. Assessment of the risk of hepatotoxicity with kava products. World Health Organization, Genebra, 2007. 82p
[54] Bedevian AK. Illustrated polyglottic dictionary of plant names in Latin, Arabic, Armenian, English, French, German, Italian and Turkish languages. Cairo: Argus & Papazian Press, 1936.
[55] Bruneton J. Pharmacognosy, phytochemistry, medicinal plants. Paris: Lavoisier, 1995.
[56] WHO. Monographs on Selected Medicinal Plants, Volume 2. World Health Organization. 2002. p. 262.
[57] Gyorgy I, Azvedo MS, Manso C. Reactions of inorganic free radicals with liverprotecting drugs. Radiation Physical Chemistry, v. 36, p.165–167, 1990.
[58] De Witte P. Metabolism and pharmacokinetics of the anthranoids. Pharmacology, v. 47 supl. 1, p. 86-97, 1993.
[59] Negreiros MSC. 2002. Uso do medicamento fitoterápico na atenção primaria do município de Pereiro - CE. Fortaleza, 98p. Monografia – Faculdade de Saúde Pública, Universidade Estadual do Ceará, 2002.
[60] Silva MIG, Sousa FCF, Gondim APS. 2005. Herbal therapy in primary health care in Maracanaú, Ceará, Brazil. AnnPharmacother 39: 1336-1341.
[61] Teixeira ER, Nogueira JF. O uso popular das ervas terapêuticas no cuidado Com o corpo. Rev Gaúcha Enferm, Porto Alegre (RS) 2005. http://www.seer.ufrgs.br/index.php/RevistaGauchadeEnfermagem/article/viewArticle/4575. Acessado. 14 de Julho de 2019.