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Ethnobotanical and ethnopharmacological survey of medicinal species utilized in the Coqueiros Community, Brazil

[Estudio etnobotánico y etnofarmacológico de especies medicinales utilizadas en la Comunidad de Coqueiros, Brasil]

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Abstract: This paper explores the medicinal plants used by Coqueiros Community, Brazil, for the treatment of various ailments. We apply the structured interview and the participant observation, and the local knowledge was analyzed using quantitative measures applied to the general sampling to contribute to selection of promising species for biotechnological development. This community cited 105 species from 53 plant families. The most representative families were Fabaceae, Asteraceae, Anacardiaceae, Myrtaceae, Annonaceae, Apocynaceae, Lamiaceae and Rutaceae. Among the species mentioned in this survey, 66,7% of them occur in the Cerrado as native vegetation. The species considered the most important by interviewees are those with action for the largest number of health problems. Thus, the statistical indexes used here, such as Relative Impotance (RI), Informant Consensus Factor (ICF) and Relative Frequency of Citation (RFC), contributed to identify these species. To conclude, from this research we have known the potential of the Brazilian vegetation for the development of biotechnology.

Keywords: Biological activity; Biodiversity; Cerrado; Medicinal plants; Brazil

Resumen: Este artículo explora las plantas medicinales utilizadas por la comunidad de Coqueiros, Brasil, para el tratamiento de diversas dolencias. Aplicamos la entrevista estructurada y la observación participante, y se analizó el conocimiento local mediante medidas cuantitativas aplicadas al muestreo general para contribuir a la selección de especies promisorias para el desarrollo biotecnológico. Esta comunidad citó 105 especies de 53 familias de plantas. Las familias más representativas fueron Fabaceae, Asteraceae, Anacardiaceae, Myrtaceae, Annonaceae, Apocynaceae, Lamiaceae y Rutaceae. Entre las especies mencionadas en esta encuesta, el 66,7% de ellas se encuentran en el Cerrado como vegetación nativa. Las especies consideradas más importantes por los entrevistados son aquellas con acción para el mayor número de problemas de salud. Así, los índices estadísticos utilizados aquí, como Impotancia Relativa (RI), Factor de Consenso del Informante (ICF) y Frecuencia Relativa de Citación (RFC), contribuyeron a identificar estas especies. Para concluir, a partir de esta investigación hemos conocido el potencial de la vegetación brasileña para el desarrollo de la biotecnología.

Palabras clave: Actividad biológica; Biodiversidad; Cerrado; Plantas medicinales; Brasil

INTRODUCTION

A long time ago, all civilizations and ancient cultures developed their own therapeutic systems using biological resources based on the observation and the empirical knowledge. Throughout the planet, the medicinal plants are still used for treatment of many diseases, and they are often the only therapeutic option for many local communities in different parts of the world (Sanz-Biset & Cañigueral, 2011; Tribess *et al.*, 2012).

According to the World Health Organization (WHO, 2001), it is estimated that 80% of the world population use medicinal plants for prophylaxis, treatment and cure of diseases. The use of medicinal plants has been investigated through ethnobotanic studies, and they have shown that the local knowledge acquired by communities is transmitted orally through generations (Saraiva *et al.*, 2015; Paredes *et al.*, 2016).

Ethnobotanical studies try to validate the popular uses of plants by the communities and to discuss different hypotheses to explain the patterns of use found. Furthermore, the information obtained has contributed for the discovery of new drugs and has provided a basis for the research on bioactive compounds. Finally, these studies are also related to the rational exploration of the resources derived from flora and to the preservation of biodiversity (Yasir *et al.*, 2010; Bolson *et al.*, 2015; Dutra *et al.*, 2016; Choudhury *et al.*, 2017).

Several studies have showed that the extensive biodiversity combined with traditional medicine of urban and rural communities place Brazil in a strategic and privileged position regarding the development of biotechnology, highlighting the relations between communities, environment and bioprospecting of plant species (Ferreira, 2014; Almeida *et al.*, 2014; Bieski *et al.*, 2015; Souza *et al.*, 2015; Crepaldi *et al.*, 2016).

Brazil presents more than 55.000 species of plants described, equivalent to 22% of the total species in the world, distributed in different biomes. One of these biomes is the Brazilian savanna, nationally known as *Cerrado*. It has one of the richest floras in the world and occupies approximately 24% of Brazilian land, more than 2 million square kilometers. About 35% of its plant species are characterized as endemic and they have therapeutic value for a large part of the local population, especially to the rural communities, where the transmission of knowledge through the generations is quite common (Toledo *et al.*, 2011; Albuquerque *et al.*, 2013; Ribeiro *et al.*, 2014). Given that, in the southeastern region of the state of Goiás are found 21 rural communities, which present a form of organization based on family farming and on the use of natural resources available (Mendes, 2005). One of these is called Coqueiros located in Catalão city, and people who live there have important knowledge about the medicinal plants.

Thus, this study explores the medicinal plants used by Coqueiros Community for the treatment of various ailments, and the resulting record of these plants provides baseline data for future phytochemistry, agronomy, environmental sustainability and biotechnological studies.

MATERIAL AND METHODS

Study area

The study was conducted by interviewing 36 individuals in the Coqueiros Community (Figure 1), located Center-North of Catalão city, which occupies an area of 3777.652 km^2 and has a population of 106.618 inhabitants (IBGE, 2018). The region is located in southeastern Goiás state, between the meridians of 47º17’ and 48º12’ W Long. Grt., and the parallels of 17º28’ and 18º30’ S Lat. It extension corresponds to 1,11% of Goiás, with a characteristic Cerrado vegetation (IBGE, 2010).

Selection of Informants

Researchers started their interaction with people of Coqueiros Community by first explaining the aims and objectives of the project in order to solicit their consent before any ethnobotanical data were gathered. Structured interview and the observation participant were used to collect the data following methods suggested by Camejo Rodrigues (2001). In order to choose the respondents, it was used the snowball technique (Thiollent, 1986), in which a respondent indicates the next one. The medicinal properties attributed during the interviews were framed in the so-called body system (disease categories), adapted from ICD 10 (International Statistical Classification of Diseases and Related Health Problems), as follows: Certain infectious and parasitic diseases – I; Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism – III; Diseases of the circulatory system – IX; Diseases of the digestive system – XI; Diseases of the genitourinary system – XIV; Diseases of the musculoskeletal system and connective tissue – XIII; Diseases of the nervous system – VI; Diseases of the respiratory system – X;

Diseases of the skin and subcutaneous tissue – XII; Endocrine, nutritional and metabolic diseases – IV; Injury, poisoning and certain other consequences of external causes – XIX; Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified – XVIII (ICD-10).

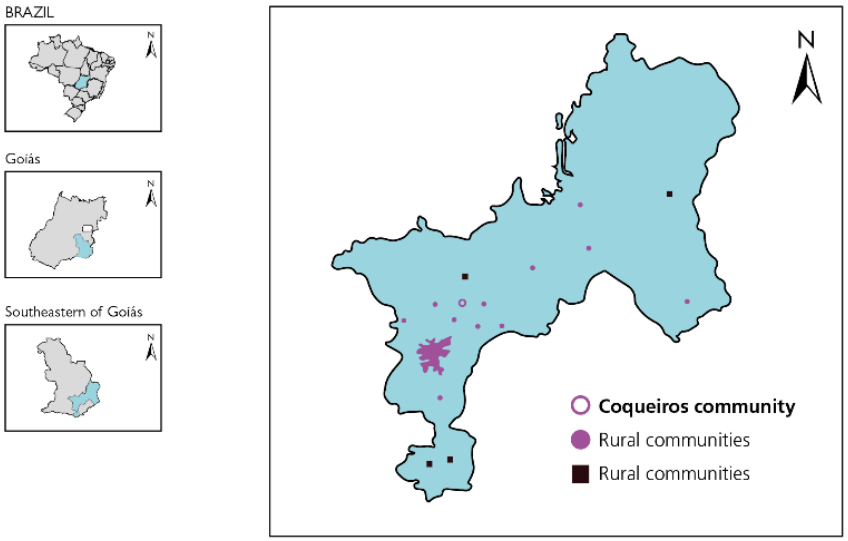

Figure No. 1
Map showing the communities present in Catalão city, Goiás state, Brazil

Ethical approval
The interview forms and prior informed consent were approved by Ethics Research Committee of the Federal University of Goiás under the number 863234.

Collection of botanical material
All plants cited by the informants were harvested directly from the interviewees and camps surroundings (authorization number A11AE20 according to the Brazilian legislation on access to the biodiversity). The plant material was identified firstly through their popular names (emic component) followed by the formal identification (etic component) using the most recent classification system APG III (Angiosperm Phylogeny Group). We checked for the scientific names, botanical families, species authors and geographic distributions using The Plant List (The Plant List, 2013) and the "Lista da Flora do Brasil" (Flora do Brasil, 2015) database. The species were dehydrated, botanized, set as exsiccates with their respective collection numbers and kept in the collection of Prof. Dr. Maria Inês Cruzeiro Moreno, in the Integrated Botany, Zoology and Ecology Laboratory of the Federal University of Catalão.

Data Analysis
The local knowledge was analyzed using quantitative measures applied to the general sampling to contribute for the selection of promising species for biotechnological development.

We used the Relative Importance Index (RI), based on the proposal of Bennett & Prance (2000) the Informant Consensus Factor (ICF) Trotter & Logan (1986), and the Relative Frequency of Citation (RFC) (Pardo-de-Santayana, 2007). Several studies have used this quantitative methodology to analyze the ethnobotanical sampling (Almeida & Albuquerque, 2002).

Relative Importance Index (RI)
The Relative Importance (RI) index was calculated for each medicinal plant based on the number of corporal systems indicated and the number of properties of the plants reported by the Community, using the formula: RI = (NCSS/NSCVS) + (NPS/NPVS), where: NCSS = number of corporal

systems treated by a given species; NSCVS = total number of corporal systems treated by the most versatile species, NPS = total number of properties attributed to a given species; NPVS = total number of properties attributed to the most versatile species (Bennet & Prance, 2000).

Informant Consensus Factor (ICF)

The Informant Consensus Factor (ICF) was proposed by Troter & Logan (1986) and aims to identify the body systems or categories of diseases that have greater relative importance in the site of the study. The ICF is calculated by obtaining the number of citations of uses in each category (Nur) minus the number of species used (Nt), divided by the number of use citations in each category minus 1. The maximum value a category can achieve is 1, which would indicate that there is a well-defined criterion for selecting medicinal plants in the community and/or that use information is shared among the people. The following formula was used to calculate the ICF: $ICF = n_{ur} - n_t/n_{ur} - 1$; where: n_{ur} is the number of citations of usage in each category and n_t is the number of species indicated in each category.

Relative Frequency of Citation

The Relative Frequency of Citation (RFC) index (Almeida & Albuquerque, 2002) was calculated by dividing frequency of citation (FC) (the number of informants mentioning a useful species) by total number of informants in the survey (N). The RFC index does not consider the variable u (use category). The RFC index ranges from 0 (when nobody referred to a plant as a useful one) to 1 (when all informants mentioned it as useful). The RFC index was calculated with the following formula: RFC = FC/N

Review criteria

This search was carried out on PubMed, Scopus, Web of Science database of papers published from 2000 to 2019. The scientific name of each species cited by the Coqueiros Community were used as search terms. Only English-language publications were considered. All the results found in the literature are displayed in Table No. 1 os supplementary material, and discussed below.

Statistical

The medicinal plants listed by the informants were organized according to the family, name, botanical name, identification number, popular name, geographical occurrence, relative importance and relative frequency of citation. The reported diseases and symptoms were grouped into 12 categories of therapeutic use according to the indicated body systems. Data were analyzed statistically and described in percentages using Graphpad Prism software (version 8.0). To analyze the relative importance of a species for its ethnomedicinal use, quantitative data (frequency of use and therapeutic indication) were calculated using the relative importance index (RI), relative frequency of citation (RFC) and Informant Consensus Factor (ICF).

RESULTS

Taxonomic categories

In the ethnobotanical study performed in the Coqueiros Community 105 species of 53 botanical families were registered (Table 1). The most representative families are Fabaceae (fourteen species); Asteraceae (six species); Myrtaceae and Anacardiaceae (five species each); and Rutaceae, Apocynaceae, Lamiaceae and Annonaceae (four species each). This information can be checked in Figure 2. The botanical families cited above contribute to 44.03% of the total richness found.

Table No. 1
Species cited in the ethnobotanic survey done at Coqueiros Community

Family/botanical name/identification number	Popular name	Geographical occurrence
Adoxaceae		
Sambucus nigra L./000129	Sabugueirão	Cultivated
Alismataceae		
Echinodorus grandiflorus (Cham. & Schltdl.) Micheli/000137	Chapéu de couro	Caatinga, Cerrado and Atlantic Forest
Amaranthaceae		
Dysphania ambrosioides (L.) Mosyakin & Clemants/000233	Erva-de-santa-maria	Cultivated
Anacardiaceae		
Myracrodruon urundeuva Allemão/000140	Aroeira	Caatinga, Cerrado and Atlantic

		Forest
Lithraea molleoides (Vell). Engl./000142	Aroeira-brava	Cerrado and Atlantic Forest
Anacardium humile A.St.-Hil./000139	Cajuzinho-do-Cerrado	Amazon, Caatinga, Cerrado and Atlantic Forest
Mangifera indica L./000130	Manga comum	Amazon, Caatinga, Cerrado, Atlantic Forest and Pampa
Tapirira guianensis Aubl./000141	Pau- pombo	Amazon, Caatinga, Cerrado, Atlantic Forest and Pampa
Annonaceae		
Annona coriacea Mart./000138	Araticum	Amazon, Caatinga, Cerrado and Pantanal
Annona muricata L./000143	Graviola	Cultivated
Xylopia aromatica (Lam.) Mart./000145	Pimenta-de-macaco	Amazon and Cerrado
Xylopia emarginata Mart./000144	Pindaíba	Amazon, Cerrado and Atlantic Forest
Apiaceae		
Apium graveolens L./000170	Aipó	Cultivated
Foeniculum vulgare Mill./000146	Funcho	Naturalized
Petroselinum crispum (Mill.) Fuss/000133	Salsa	Cultivated
Apocynaceae		
Catharanthus roseus (L.) G.Don./000147	Boa-noite-branca	Cultivated
Aspidosperma tomentosum Mart./000132	Guatambu	Amazon and Cerrado
Aspidosperma macrocarpon Mart./000171	Guatambu-do-cerrado	Amazon and Cerrado
Hancornia speciosa Gomes/000180	Mangaba	Amazon, Caatinga, Cerrado and Atlantic Forest
Aquifoliaceae		
Ilex conocarpa Reissek/000172	Congonha-do-campo	Caatinga, Cerrado and Atlantic Forest
Araceae		
Xanthosoma sagittifolium (L.) Schott/000148	Taioba	Cultivated
Arecaceae		
Mauritia flexuosa L.f./000173	Buriti	Amazon, Caatinga and Cerrado
Syagrus oleracea (Mart.) Becc./000174	Guariroba	Caatinga and Cerrado
Asparagaceae		
Agave americana L./000179	Piteira	Cultivated
Asteraceae		
Artemisia vulgaris L./000135	Estimirjo/artemisia	Naturalized
Vernonanthura brasiliana (L.) H. Rob. /000189	Assa-peixe-branco	Naturalized
Achyrocline satureioides (Lam.) DC./000183	Marcela	Cerrado, Atlantic Forest and Pampa
Ageratum conyzoides L. /000185	Mentrasto	Amazon, Caatinga, Cerrado, Atlantic Forest, Pantanal and Pampa
Bidens pilosa L./000188	Picão-do-mato	Naturalized
Lychnophora ericoides Mart./000240	Arnica-do-cerrado	Caatinga and Cerrado
Bignoniaceae		
Jacaranda brasiliana (Lam.) Pers./000175	Caroba	Amazon, Cerrado and Atlantic Forest
Handroanthus impetiginosus (Mart. ex DC.) Mattos/000178	Ipê- roxo	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Bixaceae		
Bixa orellana L./000149	Urucum	Amazon, Cerrado and Atlantic Forest
Burseraceae		
Protium spruceanum (Benth.) Engl./000151	Amescla	Amazon, Cerrado and Atlantic Forest
Calophyllaceae		
Kielmeyera coriacea Mart./000136	Pau-santo	Amazon and Cerrado
Caricaceae		
Carica papaya L./000140	Mamão-de-corda	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Caryocaraceae		

Caryocar brasiliense A.St.-Hil./000177	Pequi	Amazon, Caatinga, Cerrado and Atlantic Forest
Celastraceae		
Salacia crassifolia (Mart.ex Schult.) G. Don/000181	Bacupari	Caatinga and Cerrado
Cochlospermaceae		
Cochlospermum regium (Schrank) Pilg./000190	Algodão-do-campo	Amazon, Caatinga, Cerrado and Pantanal
Combretaceae		
Terminalia argentea Mart./000182	Capitão	Amazon, Caatinga, Cerrado and Atlantic Forest
Convolvulaceae		
Operculina hamiltonii (G. Don) D.F. Austin & Staples/000184	Amaruleite (cipó)	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Curcubitaceae		
Sechium edule (Jacq.) Sw./000187	Chuchu	Cultivated
Momordica charantia L./000186	São-caetano	Naturalized
Erythroxylaceae		
Erythroxylum tortuosum Mart./000191	Mercurinho	Cerrado
Euphorbiaceae		
Ricinus communis L./000202	Mamona	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Croton antisyphiliticus Mart./000153	Pé-de-perdiz	Amazon, Caatinga, Cerrado and Atlantic Forest
Croton urucurana Baill./000203	Sangra-d'água	Amazon, Cerrado and Atlantic Forest
Fabaceae		
Dipteryx alata Vogel/000192	Baru	Amazon, Caatinga and Cerrado
Dimorphandra mollis Benth.o/000204	Faveiro	Amazon and Cerrado
Myrocarpus frondosus Allemao/000205	Bálsamo	Atlantic Forest
Acosmium dasycarpum (Vogel) Yakovlev/000193	Chapadinha	Amazon and Cerrado
Hymenaea stigonocarpa Hayne/000207	Jatobá	Amazon, Caatinga, Cerrado, Atlantic Forest, Pantanal
Erythrina velutina Willd./000230	Murungu	Amazon, Caatinga, Cerrado and Atlantic Forest
Copaifera langsdorffii Desf./000231	Pau-d'óleo	Amazon, Caatinga, Cerrado and Atlantic Forest
Pterodon emarginatus Vogel/000156	Sucupira branca	Amazon, Caatinga, Cerrado and Pantanal
Plathymenia reticulata Benth./000157	Vinhático	Amazon, Caatinga, Cerrado and Atlantic Forest
Mimosa gracilis Benth./000194	Macilinha do campo (cipó)	Cerrado and Atlantic Forest
Anadenanthera peregrina var. *falcata* (Benth.) Altschul/000232	Angico	Caatinga, Cerrado and Atlantic Forest
Anadenanthera colubrina (Vell.) Brenan/000209	Angico-branco	Caatinga, Cerrado and Atlantic Forest
Stryphnodendron adstringens (Mart.) Coville/000154	Barbatimão	Caatinga and Cerrado
Senna occidentalis (L.) Link/000195	Fedegoso	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Icacinaceae		
Emmotum nitens (Benth.) Miers/000210	Sobre/salgueiro	Cerrado
Iridaceae		
Crocus sativus L./000155	Açafrão	Cultivated
Lamiaceae		
Mentha spicata L./000196	Alevante/hortelã	Naturalized
Leonotis nepetifolia (L.) R.Br./000211	Cordão-de-frade	Naturalized
Ocimum basilicum L./000197	Farvacão	Cultivated
Mentha piperita L./000234	Hortelã-pimenta	Cultivated
Lauraceae		
Persea americana Mill./000158	Abacate	Naturalized
Lecythidaceae		

Cariniana rubra Gardner ex Miers/000198	Bingueiro	Cerrado
Loganiaceae		
Strychnus pseudoquina A. St. Hil./000199	Quina	Cerrado
Lythraceae		
Lafoensia pacari A. St.-Hil./000200	Didalin	Cerrado
Punica granatum L./000212	Romã	Naturalized
Malpighiaceae		
Byrsonima verbascifolia (L.) DC./000201	Murici	Amazon, Caatinga, Cerrado and Atlantic Forest
Byrsonima sericea DC./000213	Murici-rasteiro	Amazon, Caatinga, Cerrado and Atlantic Forest
Malvaceae		
Abelmoschus esculentus (L.) Moench/000214	Quiabo	Cultivated
Melastomataceae		
Tibouchina mutabilis (Vell.) Cogn./000215	Manacá-do-campo	Atlantic Forest
Meliaceae		
Cedrela odorata L./000235	Cedro-branco	Amazon, Caatinga, Cerrado and Atlantic Forest
Moraceae		
Brosimum gaudichaudii Trécul/000159	Mama-cadela	Amazon, Caatinga, Cerrado and Atlantic Forest
Myrtaceae		
Eugenia dysenterica DC./000160	Gaiteira	Caatinga, Cerrado and Atlantic Forest
Syzygium aromaticum (L.) Merr. & L.M. Perry/000217	Cravinho	Cultivated
Campomanesia adamantium (Cambess.) O.Berg /000218	Gabiroba	Cerrado and Atlantic Forest
Myrcia tomentosa (Aubl.) DC./000161	Goiabinha-do-campo	Amazon, Caatinga, Cerrado and Atlantic Forest
Syzygium cumini (L.) Skeels/000219	Jamelão	Amazon, Cerrado, Atlantic Forest and Pantanal
Phytolaccaceae		
Petiveria alliacea L./000162	Guiné	Naturalized
Poaceae		
Cymbopogon citratus (DC.) Stapf/000220	Erva-cidreira/capim-santo	Cultivated
Primulaceae		
Myrsine guianensis (Aubl.) Kuntze/000221	Pororoca	Amazon, Caatinga, Cerrado and Atlantic Forest
Rosaceae		
Eriobotrya japonica (Thunb.) Lindl./000222	Ameixa-do-cerrado	Naturalized
Rosa alba L./000241	Rosa-branca	Naturalized
Rubiaceae		
Palicourea marcgravii A. St. -Hil./000236	Cafezinho	Amazon, Caatinga, Cerrado and Atlantic Forest
Genipa americana L./000163	Jenipapo	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Cordiera sessilis (Vell.) Kuntze/000223	Marmelo	Caatinga and Cerrado
Rutaceae		
Ruta graveolens L./000237	Arruda	Cultivated
Citrus medica L./000164	Cidra	Cultivated
Citrus aurantium L./000238	Laranja-da-terra	Cultivated
Citrus aurantiifolia (Christm.) Swingle/000165	Lima-de-bico	Cultivated
Sapindaceae		
Dilodendron bipinnatum Radlk./000224	Maria-pobre	Amazon, Cerrado and Atlantic Forest
Smilacaceae		
Smilax longifolia Rich./000225	Salsa-parrilha	Amazon
Solanaceae		
Nicotiana tabacum L./000239	Fumo	Naturalized
Solanum paniculatum L./000166	Jurubeba	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Solanum lycocarpum A. St.-Hil./000226	Lobeira	Cerrado and Atlantic Forest
Sapotaceae		

Pouteria ramiflora (Mart.) Radlk./000227	Guapeva	Amazon, Caatinga, Cerrado and Atlantic Forest
Urticaceae		
Cecropia pachystachya Trécul/000167	Embaúba	Amazon, Caatinga, Cerrado, Atlantic Forest and Pantanal
Velloziaceae		
Vellozia squamata Pohl/000228	Canela-de-ema	Cerrado
Verbenaceae		
Lantana camara L./000168	Camará	Amazon, Caatinga, Cerrado and Atlantic Forest
Vochysiaceae		
Vochysia elliptica Mart./000169	Pau-doce	Cerrado and Atlantic Forest

Legends: RI - Relative Importance; RFC - Relative Frequency of Citation

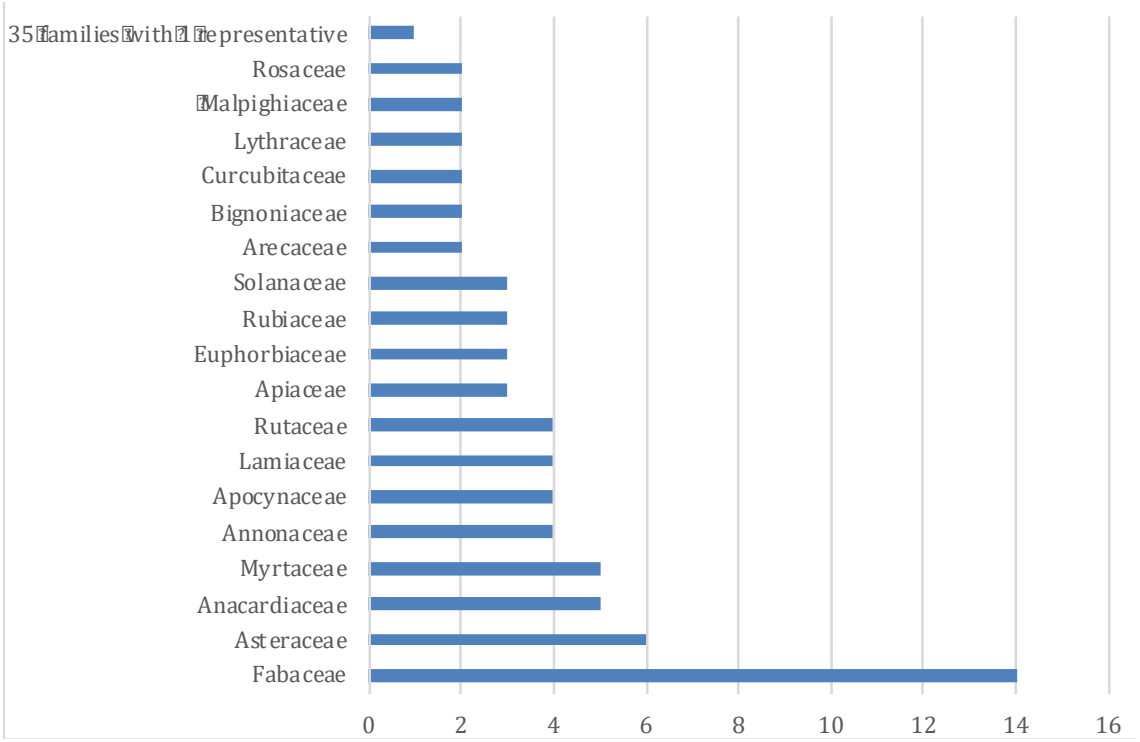

Figure No. 2
Most representative botanical families in the ethnobotanic survey of the Coqueiros Community, Catalão, Goias, Brazil

Geographical Occurrence, Relative Importance (RI) and Relative Frequency of Citation (RFC) of the species

According to the sampling extracted from The Plant List and the "Lista da Flora do Brasil" database, 66,7% of the plant species mentioned by the informants occur in Cerrado, 47,4% of them occur in the Atlantic Forest, 44,7% in the Amazon; 40,3% in Caatinga; 3,5% in Pampa, 17,5% are cultivated species, and 12,3% of them are considered to be naturalized species.

Four cited species [*Kielmeyera coriacea* Mart., *Pterodon emarginatus* Vogel, *Sechium edule* (Jacq.) Sw. and *Xanthosoma sagittifolium* (L.) Schott] present RI higher than 1.0, which demonstrates a high versatility of these species. Seven of them [*Cochlospermum regium* (Schrank) Pilg, *Caryocar brasiliense* A.St.-Hil., *Crocus sativus* L., *Croton antisyphiliticus* Mart., *Petroselinum crispum* (Mill.) Fuss, *Strychnus pseudoquina* A. St. Hil and *Syzygium cumini* (L.) Skeels.] presented RI higher than 0.8.

Kielmeyera coriacea stands out for having a RI higher than 2.0, which is the maximum value for this index. Twenty indications of use were obtained for this species, among five categories or body systems. Because of this, it is a promising species for studies on bioprospection and biotechnological development. This index therefore helps the choice of species for the continuity of studies, because the closer this value is to 2,0 the more versatile is the species, and more medicinal properties are registered for it.

The RFC, presented in Table No. 1, demonstrates the most mentioned species by the Coqueiros Community. In this context, they are *Kielmeyera coriacea*, *Mentha* × *piperita*, *Cocholospermum regium*, *Sechium edule*, *Cariocar brasiliense*, *Croton antisyphiliticus*, *Bidens Pilosa*, *Pterodon emarginatus* and *Hymenaea stigonocarpa*. *Kielmeyera coriacea* was mentioned for several illnesses, such as intestinal infection, diarrhea, leukemia, anemia, gastritis, stomachache, gum pain, toothache, cavity, arthritis, arthrosis, healing, vermifuge, kidney pain, rheumatism, uterus infections, antibiotics, skin disorders, mycosis and all types of infections.

Mentha × *piperita* is recommended for fever control. *Cocholospermum regium* is used to control gastritis, ulcers, and kidney and uterus infections. *Sechium edule* is recommended to regulate blood pressure, as diuretic and to attenuate skin allergy. *Cariocar brasiliense* is used for diabetes, antitussive and for bronchitis. *Croton antisyphiliticus* was mentioned for the flu, uterus infection and as antibiotic. *Bidens Pilosa* is used for anemia, jaundice, liver treatment and as depurative (blood cleaner). *Pterodon emarginatus* potentially acts as antibiotic and is used for the treatment of throat infections, anemia, rheumatism, acne and for weight lost. In addition, the Coqueiros Community recommended *Hymenaea stigonocarpa* as antitussive and healing.

Informant Consensus Factor (ICF)

The consensus about the therapeutic purpose of a medicinal plant is an important indicator for the validation of this species use, as can be seen in Figure 3. The recommendation for the treatment of injuries, poisonings and some other consequences of external actions presents an ICF of 0.97, in which the species *Mimosa gracilis* Benth and *Petiveria alliacea* L. are cited as antiophidic plants. For Neural System Disorders *Xanthosoma sagittifolium* (L.) Schott and *Foeniculum vulgare* Mill are the mentioned plants (ICF 0.96). All the other categories explored in this study presented an ICF above 0.84, demonstrating that these species are commonly found in the study area. Besides the ICF, it is also showed in the Figure 3 the amount of species for the body systems compared to the number of reported uses. The Infectious and parasitic diseases category was the most cited, followed by respiratory and digestive systems disorders, skin and subcutaneous tissue diseases and genitourinary system disorders.

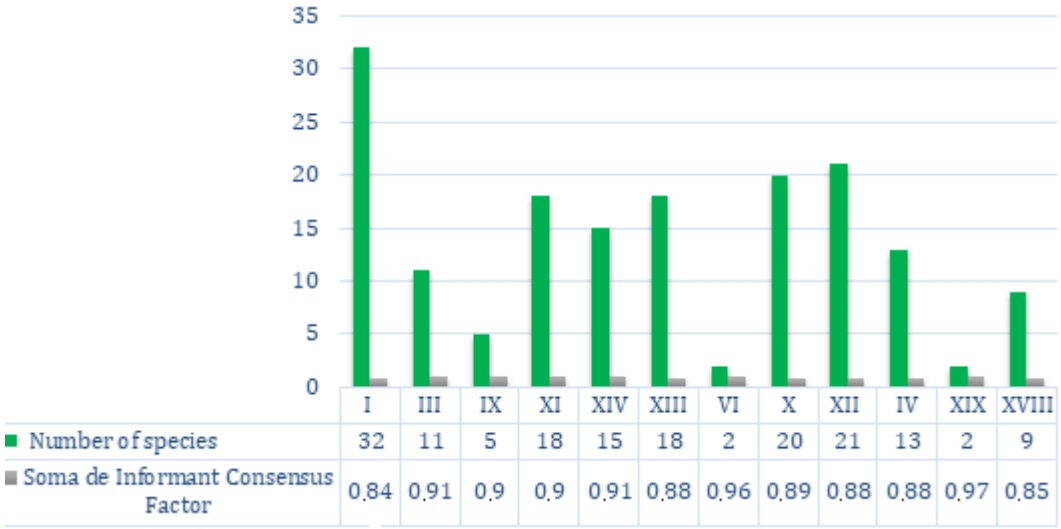

Figure No. 3
Informant Consensus Factor for the species and uses reported in the ethnobotanic survey at Coqueiros Community, Catalão (GO)

Legends: Certain infectious and parasitic diseases – I; Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism – III; Diseases of the circulatory system – IX; Diseases of the digestive system – XI; Diseases of the genitourinary system – XIV; Diseases of the musculoskeletal system and connective tissue – XIII; Diseases of the nervous system – VI; Diseases of the respiratory system – X; Diseases of the skin and subcutaneous tissue – XII; Endocrine, nutritional and metabolic diseases – IV; Injury, poisoning and certain other consequences of external causes – XIX; Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified – XVIII.

Ethnopharmacology of the medicinal plants known in the Coqueiros Community

The main use of the species by the Coqueiros Community and the pharmacological properties attributed to plants by the interviewed people are showed in the Table No. 2. The ways of preparation and the comparison between the data from the ethnobotanical survey and literature regarding the pharmacological properties are additionally presented. Out of the 105 species, 89,5% were evaluated in biological assays, with potential for biotechnological development.

Table No. 2
Comparison of local use and pharmacological properties of medicinal plants cited by Coqueiros Community

Species name	The main local use	Ways of local use	Pharmacological properties (literature review)	Reference
***Abelmoschus esculentus* (L.) Moench**	Bronchitis	Root tea	Hypolipidemic agent; α-amylase and α-glycosidase inhibitory activity; antioxidant potential; immunomodulatory activity; dietary supplement for diabetes; anti-ulcerogenic effect; antibacterial activity	Wang *et al.*, 2014; Mollick *et al.*, 2014; Lu *et al.*, 2016; Chen *et al.*, 2016; Mishra *et al.*, 2016; Ortaç *et al.*, 2018
***Achyrocline satureioides* (Lam.) DC.**	Kidney and urine infection, fever and diarrhea	Leaf tea	Spasmolytic, antiviral, anti-inflammatory and gastroprotective activities; antioxidant activity	Consentino *et al*, 2008; Salgueiro *et al*., 2016
***Acosmium dasycarpum* (Vogel) Yakovlev**	Medicinal	No indication	No information about this species on database	
***Agave Americana* L.**	Wound healing	Knead the leaves and soak in the water	Antifungal action; antioxidant action; anti-inflammatory activity	Guleria & Kumar, 2009; Rhamani *et al.*, 2016
***Ageratum conyzoides* (L.) L.**	Menstrual pain, constipation and gastritis	Leaf tea	Hemostatic, healing, analgesic, anti-inflammatory and antirheumatic properties; cardiac depressant effect antibacterial activity; antifungal activity; antiulcerogenic activity	Misra *et al.*, 2018; Achola & Munenge, 2008; Ezeomwumelu *et al*, 2017; Wuyep *et al.*, 2017; Aladdin *et al.*, 2017
***Anacardium humile* A.St.-Hil.**	Stomachache	Leaf and fruit tea	Gastroprotective and antiulcerogenic effects; insecticidal potential; antibacterial activity; antifungal activity	Luiz-Ferreira *et al*., 2008; Gomes & Favero, 2011; Royo et al., 2015; Nery *et al*., 2010; Maia *et al*, 2016
***Anadenanthera colubrina* (Vell.)**	Antibiotic	Outer bark	Hallucinogenic and	Araújo *et al.*, 2017

Brenan		infusion	hypnotic effects; antimicrobial activity	
***Anadenanthera peregrina* var. *falcata* (Benth.) Altschul**	Antibiotic	Outer bark infusion	Antimicrobial, antitumor and antioxidant activities	Lima *et al.*, 2014
***Annona coriacea* Mart.**	Fruitful and diabetes	Fresh fruit	Analgesic, anti-inflammatory and antiulcerogenic properties	Souza *et al.*, 2010; Estrela *et al.*, 2017
***Annona muricata* L.**	Fruitful and diabetes	Fresh fruit; juice	Antitumor and insecticidal activities; protective effect of mouse liver with diabetes; antinociceptive and anti-inflammatory properties; antimicrobial activity; antiulcerogenic activity; cytotoxicity, antitumor-promoting and antioxidant activities	Adewole & Ojewole, 2009; Souza *et al.*, 2010; Pinto *et al.*, 2017; Bento *et al.*, 2018 Roduan *et al*., 2019
***Anonna* sp**	Infection and kidney stone	Leaf tea	No information about this species on database	
***Apium graveolens* L.**	Menstrual cramps	Leaf tea	Activities against mosquito, nematoid and antifungal; phytotherapy for urinary tract infections	Gauri *et al*., 2015; Grube *et al.*, 2019
***Artemisia vulgaris* L.**	Menstrual cramps	Leaf tea	Antidiarrheal and bronchodilatory activities; antimalarial actions; analgesic; antioxidant and antibacterial activity; immunomodulatory effects	Khan & Gilani, 2009; Pires *et al*., 2009; Pandey *et al*., 2017; Marbun *et al.*, 2018
***Aspidosperma macrocarpon* Mart.**	Medicinal	No description	Antiproliferative activity against cancer cells; cardiovascular effects; antiproliferative activity	Kohn *et al*., 2006; Oliveira *et al.*, 2012a; Bannwart *et al.*, 2013
***Aspidosperma tomentosum* Mart.**	Medicinal	No description	Antinociceptive and anti-inflammatory properties; antihypertensive and vasorelaxant effects	Furtado *et al.*, 2017
***Bidens pilosa* L.**	Depurative (blood cleaner), anemia, liver and jaundice	Tea and bath with root and branches	Hepatoprotective and anti-inflammatory properties; analgesic action, antibacterial activity; antibacterial activit; antioxidant activity	Jager *et al*., 1996; Owoyemi & Oladunmoye, 2017; Falowo *et al.*, 2019
***Bixa orellana* L.**	Flu	Knead the seed and cook in water with sugar (syrup)	Antioxidant and antimicrobial activities; antifungal activity, antibacterial, antioxidant, anti-inflammatory, antidiarrheal,	Cuong & Chin, 2016; Shahid-ul-Islam & Rather, 2016; Lopez *et al*., 2017

			analgesic, anticarcinogenic, neuropharmacologica, anticonvulsant and gastrointestinal effects; hepatoprotective activity	
***Brosimum gaudichaudii* Trécul**	Fruitful, infection and depurative (blood cleaner)	Eat the fresh fruit; root infusion	Antibacterial activity	Borges *et al*., 2017
***Byrsonima sericea* DC.**	Depurative (blood cleaner), allergy and rheumatism	Bottled of root with water	Laxative, astringent and febrile activities; gastroprotective effect	Mors *et al*., 2000; Rodrigues *et al*., 2012
***Byrsonima verbascifoli* (L.) DC.**	Medicinal	No description	Laxative, astringent and febrile activities; anti-inflammatory activity	Rodrigues *et al*, 2012; Saldanha *et al*., 2016
***Campomanesia adamantium* (Cambess.) O.-Berg**	Fruitful and medicinal	The fruit is edible *in natura*; no medicinal description	Antimicrobial activity; antidiarrheal and anti-inflammatory action; antioxidant and antihyperlipidemic effects; antinociceptive; antimicrobial activity; antiproliferative potential	Cardoso *et al*., 2010; Lescano *et al*., 2016; Espindola *et al*., 2016; Viscardi *et al*., 2017; Sá *et al*., 2018; Alves *et al*., 2019)
***Carica papaya* L.**	Fruitful, stomach intoxication, kidney pain and vermifuge	Leaf sprout and flower tea	Antibacterial and anthelmintic actions; for digestion; reduction of blood pressure; spasmolytic activity; antimalarial activity; antiproliferative action against prostate cancer; anti-dengue activity	Okpe *et al*., 2016; Pandey *et al*., 2017; Sharma *et al*, 2019
***Cariniana rubra* Gardner ex Miers**	Medicinal	Fruit	Anti-inflammatory, antinociceptive and antipyretic effects; antimicrobial and antioxidant activities	Santos *et al*., 2011; Silva *et al*., 2017
***Caryocar brasiliense* A.St.-Hil**	Decrease diabetes, antitussive, bronchitis and fruitful	Tea and infusion of leaves; outer bark infusion; baked fruit	Antioxidan; anti-inflammatory effects; antifungal activity; analgesic	Torres *et al*., 2016; Breda *et al*., 2016; Jorge *et al*., 2020
***Catharanthus roseus* (L.) G. Don.**	Reduce uric acid	Flower tea	Diabetes; antileukemic, vasodilator and antihypertensive effects; antioxidant, antimicrobial and cytotoxic activities; larvicidal action	Singh *et al*., 2001; Pham *et al*., 2018; Vairavan *et al*., 2018
***Cecropia pachystachya* Trécul**	Medicinal	No description	Anti-inflammatory and renal arginase activities	Maquiaveli *et al*., 2014
***Cedrela odorata* L.**	Medicinal	No description	Antimalarial action; antioxidant activity	Rashed, 2014
***Citrus* × *aurantium* L.**	Diarrhea	Scrape the peel of the fruit and boil	Anxiolytic and sedative effects, anti-	Carvalho-Freitas & Costa, 2001; El-Akhal *et al*., 2015

		it with the leaf	inflammatory; larvicidal activity	
***Citrus aurantiifolia* (Christm.) Swingle**	Liver intoxication, stomachache and sinusitis	Leaf tea and fruit extracted in the alcohol	Antifungal action; spasmolytic activity	Viuda-Martos, 2008; Spadaro, 2012
***Citrus medica* L.**	Fruitful, medicinal, lose weight and antitussive	Grate the fresh fruit, soak it in water and store in the fridge	Diabetes and Alzheimer's disease; antimicrobial; antiproliferative; antibacterial; antibiofilm activity.	Conforti *et al*., 2007; Mitropoulou *et al.*, 2017; Zhang *et al.*, 2019a
***Cochlospermum regium* (Schrank) Pilg.**	Gastritis, ulcer, kidney and uterus infections, and general infections	Chew the potato in fasting; infusion	Analgesic; antigenitourinary infection; gastroprotective activity	Leme *et al*., 2017; Arunachalam *et al*., 2019
***Copaifera langsdorffii* Desf.**	Medicinal	No description	Antioxidant and antimutagenic activities	Batista *et al*., 2016
***Cordiera sessilis* (Vell.) Kuntze**	Fruitful and against toothache	Fresh fruit; leaf tea	Antifungal activity; antioxidant; antimicrobial activities	Silva *et al*., 2007; Aquino *et al*., 2013
***Crocus sativus* L.**	Flu, sore throat, vermifuge and healing effect	Powdered root with honey; cataplasm	Antinociceptive and anti-inflammatory effects; antidepressant activity; neuroprotective effect	Hosseinzadeh & Younesi, 2002; Noorbala *et al*.., 2005; Asadollahi *et al.*, 2019
***Croton urucurana* Baill.**	Medicinal	No description	Antiviral, herpes, anti-inflammatory and antioxidant activities; gastroprotective activity; anti-inflammatory and antinociceptive activities	Cordeiro *et al*., 2016
***Croton antisyphiliticus* Mart.**	Flu, uterus infection, antibiotic and general infection	Root tea	Anti-inflammatory action	Reis *et al*., 2014
***Cymbopogon citratus* (DC.) Stapf**	Fever	Leaf tea	Analgesic, control of nervousness and uneasiness; antimalarial activity; antioxidant and cytoprotective effects; anti-herpetic activity; antiproliferative activity	Chukwuocha *et al.*, 2016; Jamuna *et al*., 2017; Almeida *et al*, 2018; Agada *et al*., 2018
***Dilodendron bipinnatum* Radlk.**	Reduce uric acid and cholesterol	Bottled of the outer bark with water (drink three times per day)	Antimicrobial activity; anti-inflammatory action	Oliveira *et al*., 2014; Oliveira *et al*., 2018
***Dimorphandra mollis* Benth**	Abortive	Outer bark infusion	No information about this species on database	
***Dipteryx alata* Vogel**	Body pain, arthritis and arthrosis	Nine nuts placed in the wine	Antiophidian property; antioxidant action; antileishmanial activity and cytotoxicity	Nazato *et al*., 2010
***Dysphania ambrosiodes* (L.) Mosyakin & Clemants**	Twists	Knead leaf (cataplasm)	Antimicrobial activity; urinary tract infections – antibacterial activity; antioxidant;	Rota *et al*., 2008; Marchese *et al*., 2016; Lagha *et al*., 2019; Cutillas *et al*., 2018

			anti-lipoxygenase activities	
***Drimys brasiliensis* Miers**	Infections and healing	Outer bark infusion	Antifungal activity; anti-leishmanial; anti-trypanosomal actions; anti-inflammatory action; bioherbicidal activity	Malheiros *et al*, 2005; Correia *et al*., 2011; Lago *et al*., 2010; Barrosa *et al*., 2016; Anese *et al*., 2015
***Echinodorus grandifloras* (Cham. & Schltdl.) Micheli**	Depurative (blood cleaner), high blood pressure and rheumatism	Leaf tea	Antihypertensive effect; vasodilator; anti-proliferative potential; heart-protective effect	Lessa *et al*, 2008; Tibiricá *et al*., 2007; Coelho *et al*., 2017; Gasparotto *et al*, 2018; Alves *et al*., 2000
***Emmotum nitens* (Benth.) Miers**	Medicinal and fruitful	No description	No information about this species on database	
***Eriobotrya japonica* (Thunb.) Lindl.**	Decrease high blood pressure	Leaf tea	Anti-melanogenesis; anti-acne, anti-aging; anti-inflammatory and antitumor promoting effects; antioxidant action; cytotoxic and antimicrobial activities; neutrophil elastase inhibitory effect	Tan *et al*., 2017; Banno *et al*., 2005; Delfanian *et al*., 2016; Zhou *et al*., 2019 Zhang *et al*., 2019b
***Erythrina velutina* Willd.**	Depurative (blood cleaner), allergy and rheumatism	Bottled of the outer bark with water	Spasmolytic, healing; depressant activity; anxiolytic-like effect; neutrophil elastase inhibitory effect	Zhang *et al*., 2019; Raupp *et al*., 2008
***Erythroxylum tortuosum* Mart.**	Healing and infection	Thicken the outer bark with water until it forms a syrup	Antinociceptive activity	Marchioro *et al*., 2005
***Eugenia dysenterica* DC.**	Fruitful, laxative and to trap the intestine	Fresh fruit; leaf tea	Antifungal activity; antioxidant and neuroprotective properties; antimicrobial activity	Costa *et al*., 2000; Thomaz *et al*., 2018; Oliveira *et al*., 2018
***Foeniculum vulgare* Mill.**	Calmative effect and constipation	Leaf tea	Insecticidal, antifungal, digestive stimulant, carminative and spasmolytic	Pavela, 2018
***Genipa americana* L.**	Decrease diabetes and depurative (blood cleaner)	Fresh fruit; outer bark boiled in the water, percolated and stored in the fridge	Hypertensive, antimicrobial, antifungal, antitumor activities; anticoagulant, antiplatelet and antithrombotic effects	Madeira *et al*., 2018
***Hancornia speciosa* Gomes**	Fruitful, expectorant, flu and depurative (blood cleaner)	Leaf tea; fresh fruit; outer bark boiled in the water	Gastroprotective; antibacterial activities; anti-inflammatory action	Moraes *et al*., 2008; Marinho *et al*., 2011; Barbosa *et al*., 2019
***Handroanthus impetiginosus* (Mart. ex DC.) Mattos**	Medicinal	No description	Anti-inflammatory; anti-obesity effect	Iwamoto *et al*., 2016; Santana *et al*., 2016; Martins *et al*., 2015a
***Hymenaea stigonocarpa* Hayne**	Antitussive and healing	Cook the outer bark with water and sugar (syrup); cataplasm with resin and egg white	Antimitotic and antimutagenic action; gastroprotective activity; intestinal anti-inflammatory activity	Orsi *et al*., 2014

***Ilex conocarpa* Reissek**	Bronchitis and heart problems	Leaf tea (drink in the waning moon)	No information about this species on database	
***Jacaranda brasiliana* (Lam.) Pers**	Rheumatism	Outer bark tea	No information about this species on database	
***Kielmeyera coriacea* Mart.**	Intestinal infection, diarrhea, leukemia, anemia, gastritis, stomachache, gum pain, toothache, cavity, arthritis, arthrosis, healing, vermifuge, kidney pain, rheumatism, uterine infections, antibiotic, skin problems, mycoses and all kinds of infections	Leaf tea and infusion; bath with outer bark; bottled of outer bark with *cachaça*; syrup from the outer bark to cataplasm; thicken the outer bark with milk (candy); knead the outer bark, soak in the water for 24 hours and store in the fridge; chew the fresh outer bark	Anti-ulcer effect; antidepressant activity; anxiolytic activity; antioxidant; antimicrobial actions; cytotoxic activity	Goulart *et al*., 2007; Aquino *et al*., 2013; Toledo el al., 2011; Biesdorfi *et al.*, 2012; Martins *et al*., 2015b
***Lafoensia pacari* A. St.-Hil.**	Gastritis and heartburn	Knead the outer bark and soak in the water	Anti-bacterial, antitumor, antipyretic and febrifuge activities; anti-inflammatory activity; anti-eosinophilic effect; analgesic activity and antinociceptive actions; anti-secretory, antioxidant, gastroprotective activity and ulcer healing properties; antidepressant activity	Rogério *el al*., 2003; Lima *et al*., 2006; Rogerio *et al*., 2008b; Rogério *et al*., 2008a; Rogério *et al*., 2010; Nascimento *et al*., 2011; Tamashiro *et al*., 2012; Galdino *et al*., 2009; Galdino *et al*., 2015
***Lantana camara* L.**	Antitussive	Cook the flower with water and sugar (syrup)	Antifeedant activity; antimalarial; insecticidal; cytotoxic action; antiulcerogenic activity; antioxidant action; repellent action; antimicrobial property; antidiarrheal activity	Carrillo-Rosario & Ramirez, 2006; Mohamed & Abdelgaleil, 2008; Srivastava *et al*., 2010; Sathish *et al*., 2011; Benites *et al*., 2009; Mahdi-Pour *et al.*, 2012; Yuan & Hu, 2012; Naz & Bano, 2013; Tadesse *et al*., 2017
***Leonotis nepetaefolia* (L.) R.Br.**	Fever caused by measles	Branches tea	Anti-inflammatory activity; antimicrobial action; cytotoxic potential	Parra-Delgado *et al.*, 2004; Oliveira *et al*., 2015
***Lithraea molleoides* (Vell). Engl.**	Toxic and skin allergy	Lean on the branches	Allergic dermatitis; antiviral activity; antimicrobial activity; cytotoxic action; antiulcerogenic and antimicrobial properties	Penna *et al*., 2001; Ruffa *et al*, 2002; Araujo *et al*, 2006; Garro *et al*, 2015
***Lychnophora ericoides* Mart.**	Pain in joints and bones, torsion, arthritis, arthrosis and infection	Soak the outer bark in the alcohol and make compress	Antibacterial; analgesic activity	Koo *et al*., 2000
***Mangifera indica* L.**	Cramps and analgesic	Leaf tea	Immunomodulatory activity; antibacterial action; antioxidant action; anti-	Makare *et al.*, 2001; Kaur *et al*., 2010; Arogba & Omede, 2012; Mohan *et al.*, 2013;

			inflammatory activity; antidiarrheal activity; anti-obesity effect; cytotoxic and hypoglycemic activities	Yakubu & Salimon, 2015; Ramírez *et al.*, 2017; Choudhury *et al.*, 2017
***Mauritia flexuosa* L.f.**	Antitussive and healing	Ingest drops of nut oil and apply to wounds, burns or blemishes	Antibacterial and healing activities; antioxidant and antimicrobial actions	Koolen *et al.*, 2013; Cândido *et al.*, 2015
***Mentha spicata* L.**	Uterus cleansing and infection	Bottled of the leaves with water	Antifungal, antiaflatoxigenic and insecticidal activities; antioxidant and antibacterial actions; cytotoxic effects; hypoglycemic, hypocholesterolemic and antioxidant properties	Kedia *et al.*, 2014; Scherer *et al.*, 2013; Chrysargyris *et al.*, 2017; Brahmi *et al.*, 2017; Bayani *et al.*, 2017
***Mentha* × *piperita* L.**	Fever	Leaf tea	Antisecretory, antiulcer and cytoprotective effects; antimicrobial and antioxidant activities; antinociceptive activity	Al-Mofleh *et al.*, 2006; Sharafi *et al.*, 2010; Taher, 2012; Mojtaba *et al.*, 2019
***Mimosa gracilis* Benth.**	Antiophidian	Knead the root and soak in the water for at least 4 hours	No information about this species on database	
***Momordica charantia* L.**	Vermifuge	Knead the fruit and soak in water	Hypoglycemic activity; antiulcerogenic effect; antifeedant activity; anti-ulcer activity; neuroprotective effect; antibacterial activity; anticancer activity; antimalarial activity; antidiabetic activity	Ürbüz *et al.*, 2000; Bing *et al.*, 2008; Alam *et al.*, 2009; Malik *et al.*, 2011; Costa *et al.*, 2011; Shobha *et al.*, 2015; Christy *et al.*, 2016; Mahmoud *et al.*, 2017
***Myrcia tomentosa* (Aubl.) DC.**	Fruitful, medicinal, intestinal infection and diarrhea	Infusion of leaf sprout	Antioxidant activity; antimicrobial activity	Takao *et al.*, 2015; Sa *et al.*, 2017
***Myrocarpus frondosus* Allemao**	Healing	Put the outer bark in the *cachaça* or boil in water	Antifungal activity; trypanocidal effect; antioxidant and antimicrobial activities	Jerke *et al.*, 2008; Azeredo *et al.*, 2014; Santi *et al.*, 2017
***Myrsine guianensis* (Aubl.) Kuntze**	Medicinal	No description	Anti-protozoal activity	Charneau *et al.*, 2016
***Neoglaziovia variegate* (Arruda) Mez**	Amebiasis and worm	Make the candy of the fruit before ripening	Antioxidant activity; gastroprotective effect; acaricidal activity; photoprotective activity	Lima-Saraiva *et al.*, 2012; Machado *et al.*, 2013; Dantas *et al.*, 2015; Oliveira-Júnior *et al.*, 2017
***Nicotiana tabacum* L.**	Chicken louse	Line the chicken's nest with branches	Antimicrobial activity; antioxidant property; acaricidal activity; anthelminthic activity; anti-aphthous activity	Bakht & Sahafi, 2012 Vaziri *et al.*, 2016
***Ocimum basilicum* L.**	Antitussive	Hit the twig with flowers on the	Antimicrobial activity; anticancer; larvicidal	Ru *et al.*, 2012; Zaman *et al.*, 2012;

		eggnog	action; immunomodulatory activity; insecticidal and antiplasmodial properties; antifungal and phytotoxic activities; anti-inflammatory and antiedematogenic activities	Nouri *et al*., 2016; Moreira *et al*., 2005; Qamar *et al*., 2010; Govindarajan *et al*., 2013; Nahak & Sahu, 2014; Ntonga *et al*., 2014; Rodrigues *et al*., 2016; Ahmad *et al*., 2016
***Operculina hamiltonii* (G. Don) D.F. Austin & Staples**	Depurative (blood cleaner), allergy and rheumatism	Knead and soak in the water	No information about this species on database	
***Palicourea marcgravii* A. St.-Hil.**	Medicinal	No description	Acaricide action, cardiotoxic.	Ahamad *et al*., 2016
***Persea americana* Mill.**	Fruitful and decrease high blood pressure	Fresh fruit; leaf tea	Vasorelaxant action; anticonvulsive effect; cardiovascular effect; anti-diabetic activity; anti lithiasis activity; effect on body weight; antidiarrheal property; antiprotozoal and antimycobacterial activity; antihepatotoxic activity; antioxidant properties; anti-inflammatory and analgesic activities	Owolabi *et al*., 2005; Ojewole & Amabeoku, 2009; Ojewole *et al*., 2007; Lima *et al*., 2012; Wientarsih *et al*., 2012; Brai *et al*., 2013; Jiménez-Arellanes *et al*., 2013; Oso, 2013; Omodamiro *et al*., 2016; Folasade *et al*., 2016; Kristanti *et al*., 2017
***Petiveria alliacea* L.**	Antiophidian and fever	Leaf and root infusion	Antinociceptive activity; anticonvulsant action; anxiogenic and anxiolytic effects; acaricide action; stimulant; anxiolytic effects; cytotoxic activities; anti-inflammatory activity	Gomes *et al*., 2008; Blainski *et al*., 2010; Rosado-Aguilar *et al*., 2010; Andrade *et al*., 2012, Hernández *et al*., 2017; Oluwa *et al*., 2017
***Petroselinum crispum* (Mill.) Fuss**	Uterus cleansing, infection and menstrual cramps	*in natura;* leaf infusion	Anti-inflammatory and anti-hepatotoxic activities; antioxidant and antibacterial effects; hypoglycemic agent; spasmolytic activity; immunomodulatory activity; antioxidant activity; antimicrobial action; antiosteoporotic effect; molluscicidal activity	Al-Howiriny *et al*., 2003; Wong & Kitts, 2006; Ozsoy-Sacan *et al*., 2006; Moazedi *et al*., 2007; Yousofi *et al*., 2012; Tang *et al*., 2015; Linde *et al*., 2016; Hozayen *et al*., 2016; Sousa *et al*., 2017
***Plathymenia reticulata* Benth.**	Medicinal	No description	Antimutagenic activity; antimicrobial, anti-inflammatory and antiproliferative activities; protective potential of methylmercury	Della Torre *et al*., 2011; Toledo *et al*, 2011; Gombeau *et al*., 2019
***Pouteria ramiflora* (Mart.) Radlk.**	Fruitful and medicinal	Fresh fruit	Antioxidant activity; antinociceptive and	Silva *et al*., 2008; Fontes-Júnior *et al*., 2009;

			anti-inflammatory properties; neuroprotective effects; antifungal activity	Costa *et al*., 2013; Correia *et al*., 2016
***Protium spruceanum* (Benth.) Engl.**	Healing and wound infections	Cataplasm with the outer bark and resin	Anti-inflammatory and antinociceptive activities, antibacterial and cytotoxic actions	Rodrigues *et al*., 2013; Amparo *et al*., 2018
***Pterodon emarginatus* Vogel**	Antibiotic, rheumatism, throat infection, anemia, lose weight and acne treatment	Boil the outer bark in the water; knead the fruit and make a bottled with wine or alcohol/water (gargle); for acne, extract the oil from the seed and clean the skin with cotton	Antioxidant potential; antimicrobial activity; antinociceptive action; anti-inflammatory activity; vasorelaxation activity; larvicidal potential	Dutra *et al*., 2008; Dutra *et al*., 2009; Moreno *et al*, 2019; Oliveira *et al*., 2012b; Pascoa *et al*., 2015; Reis *et al*., 2015; Oliveira *et al*., 2017
***Punica granatum* L.**	Bowel, throat, uterus and general infections and diarrhea	Cook the fruit peel in water and sugar (syrup)	Anthelmintic and immunomodulatory effects; anti-aflatoxigenic; antifungal activities; antimicrobial activity	Labsi *et al*., 2016; Hassan *et al*., 2017; Mostafa *et al*., 2018)
***Ricinus communis* L.**	Healing for twists and fractures	Cataplasm with the fruit oil	Anti-inflammatory action; acaricidal property; antimicrobial; insecticide activity; hepatoprotective property.	Ilavarasan *et al*., 2006; Ghosh *et al*., 2013; Rampadarath *et al*., 2014; Babu *et al*., 2017
***Rosa alba* L.**	Skin cleansing and depurative (blood cleaner)	Boil the flower with milk, drink it and after, clean the face with cotton	Antioxidant and antimicrobial activities; citotoxic and genotoxic potential	Gochev *et al*, 2010; Mileva *et al*., 2014; Jovtchev *et al*., 2018
Ruta graveolens L.	Constipation	Leaf tea	Antinociceptive effect; antimicrobial; cytotoxic activities; anti-inflammatory potential; anti-inflammatory; antioxidant activity; antibacterial action; immunomodulatory	Ivanova *et al*., 2005; Raghav *et al*., 2006; Kataki *et al*., 2014; Amabye & Shalkh, 2015; Pandey *et al*., 2016; Eldalawy, 2017
***Salacia crassifolia* (Mart.ex Schult.) G. Don**	Infection and skin allergy	Knead the root with the pestle, make tea, percolate and put milk to cook (candy)	Antigenotoxic effect; antimicrobial property; chemopreventive agent; antiviral activity against *Mayaro* virus; antimutagenicity	Carneiro *et al*., 2013; Rodrigues *et al*., 2015; Ferreira *et al*., 2018; Carneiro *et al*., 2018
***Sambucus nigra* L.**	Flu and diuretic	Leaf tea	Anti-inflammatory effect; anticonvulsant activity; antioxidant activity	Olejnik *et al*, 2015; Ataee *et al*., 2016; Viapiana & Wesolowski, 2017
***Sechium edule* (Jacq.) Sw.**	Nutritive, medicinal against skin allergy, decrease of blood	Baked fruit; leaf tea	Antimicrobial activity; antioxidant action; antibacterial activity; potential antidiabetic	Ordoñez *et al*., 2003; Ordõnez *et al*., 2006; Sibi *et al*., 2013; Simpson & Morris, 2014;

	pressure and diuretic		effect; cardioprotective activity	Neeraja *et al.*, 2015
***Senna occidentalis* (L.) Link**	Diarrhea and bowel and stomach infections	Leaf tea	Anti-trypanosomal activity; mosquitocidal and antiplasmodial activities; antioxidant and antimicrobial activities; antiemetic activity; osteogenic effect	Ibrahim *et al.*, 2014; Odeja *et al.*, 2014; Essien *et al.*, 2018; Pal *et al.*, 2019
***Smilax longifolia* Rich.**	Infections and allergy of skin and rheumatism	Root infusion	No information about this species on database	
***Solanum lycocarpum* A. St.-Hil.**	Antitussive	Cook the whole mature fruit with honey, putting on the plate of the wooden stove	Hypoglycemic agent; antigenotoxic; cytotoxic potential; immunomodulatory effect; larvicidal activity	Perez *et al.*, 2006; Munari *et al.*, 2012; Miranda *et al.*, 2013; Pereira *et al.*, 2014; Andrade *et al.*, 2016
***Solanum paniculatum* L.**	Liver intoxication	Knead the root and soak in water	Antiulcer activity; antidiarrheal action; antimicrobial agent; anticancer activity	Vieira *et al.*, 2015; Tenório *et al.*, 2016; Macêdo-Costa *et al.*, 2017; Carvalho *et al.*, 2019
***Strychnus pseudoquina* A. St. Hil.**	Open up the appetite, gastritis, vermifuge and general infection	Dry the outer bark and grind (flour)	Antiulcerogenic activity; immunomodulatory effect; antiherpes activity	Santos *et al.*, 2006; Boff *et al.*, 2016
***Stryphnodendron adstringens* (Mart.) Coville**	Healing, astringent and antibiotic	Knead the outer bark and soak in water; thicken the outer bark with water until it forms a syrup	Antiseptic activity; dietary supplementation; anti-inflammatory activity; antimicrobial; antifungal activity	Souza *et al.*, 2007; Lima *et al*, 2016; Henriques *et al.*, 2016; Costa *et al.*, 2010; Almeida *et al.*, 2017
***Syagrus oleracea* (Mart.) Becc.**	Food	Cook or pickled stem	Antioxidant action; antimicrobial activity; nutritional potential	Silva *et al.*, 2005; Silveira *et al.*, 2005
***Syzygium aromaticum* (L.) Merr. & L.M. Perry**	Depurative (blood cleaner), allergy and rheumatism	Root and water bottled	Antiviral activity; anti-giardia activity; antibacterial action; antioxidant effect; antitermitic and antifungal activities; antifungal activity; anticancer effect	Hussein *et al.*, 2000; Machado *et al.*, 2011; Pandey *et al.*, 2014; Baghshahi *et al.*, 2014; Xie *et al.*, 2015; Sharma *et al.*, 2017; Kubatka *et al.*, 2017
***Syzygium cumini* (L.) Skeels**	Decrease diabetes, cholesterol, high blood pressure and diuretic	Fresh fruit and leaf tea	Anticonvulsant action; antibacterial activity; antiallergic; antimicrobial activity; anti-inflammatory activity; chemopreventive action; anticancer; acaricidal action; antidiarrheal activity; antioxidant activity; antinociceptive activity; hepatoprotective activity; cardioprotective activity; hypoglycemic	Shafi *et al.*, 2002; Brito *et al.*, 2007; Oliveira *et al.*, 2007; Kumar *et al.*, 2008; Parmar *et al.*, 2010; Yadav *et al.*, 2011; Afify *et al.*, 2011; Shamkuwar *et al*, 2012; Quintans *et al.*, 2014; Islam *et al.*, 2015; Atale *et al.*, 2013; Atale & Rani, 2016; Baldissera *et al.*, 2016; Yadav *et al.*, 2018

			potential	
***Tapirira guianensis* Aubl.**	Antibiotic	Leaf tea	Cytotoxic activity; antiplasmodial action; anticancer activity; vasodilatory and antioxidant activities	Taylor *et al.*, 2008; Roumy *et al.*, 2009
***Terminalia argentea* Mart.**	Bronchitis and antitussive	Cook the outer bark with water and sugar (syrup)	Antigenotoxic effect	Beserra *et al.*, 2018
***Tibouchina mutabilis* (Vell.) Cogn.**	Rheumatism	Outer bark tea	Antiviral activity	Fernandes *et al.*, 2012
***Vellozia squamata* Pohl**	Back pain and rheumatism	Bottled of the branches with wine	Antioxidant property	Quintão *et al.*, 2013
***Vermonanthura brasiliana* (L.) H. Rob.**	Antitussive	Cook with water and sugar (syrup)	No information about this species on database	
***Vochysia elliptica* Mart.**	Gum and intestinal infections, cavity and diarrhea	Outer bark infusion	No information about this species on database	
***Xanthosoma sagittifolium* (L.) Schott**	Food, medicinal, reduce uric acid, calmative and depurative (blood cleaner)	Braise the leaf	Antifungal action; antioxidant activity; antileukemic action; cytotoxic activity	Schmourlo *et al.*, 2005; Nishanthini & Mohan, 2012; Caxito *et al.*, 2015; Hossain *et al.*, 2015
***Xylopia aromatica* (Lam.) Mart.**	Medicinal	No description	Larvicidal action; antimalarial activity; antiplasmodial activity; cytotoxic potential; antiprotozoal activity; antileishmanial activity; anti-inflammatory activity	Rodrigues *et al.*, 2016; Garavito *et al.*, 2006; Mesquita *et al.*, 2007; Suffredini *et al.*, 2007; Osorio *et al.*, 2007; Tiuman *et al.*, 2011; Oliveira *et al.*, 2014

DISCUSSION

The use of plant-based medicines implies the need to implement basic research to clarify and confirm information about the actions of the plants, in this sense, in addition to the ethnopharmacological survey (Rodrigues *et al.*, 2016), we made a literature review of the pharmacological studies carried out with species cited in this survey.

All the interviewed people from the Community claimed to know and to use medicinal plants. The percentage of ethnomedicinal knowledge in communities ranges from 42% to 98% of its residents, depending on the region studied (Bekalo *et al.*, 2009). The knowledge of traditional medicine is usually bigger in small communities, especially in the rural ones, whose population has practical experience.

The most representative families were Fabaceae, Asteraceae, Lamiaceae, Myrtaceae, Annonaceae, Anacardiaceae, Rutaceae, and Apocynaceae, which contribute for 42,1% of the recorded richness. Fabaceae was reported in some studies (Guarim Neto & Maciel, 2008, Guarim Neto & Pasa, 2009) as being one of the most representative families in ethnobotanical surveys. Almeida & Albuquerque (2002) registered 114 species in 55 families, and eight of them were considered more representative. Among these eight species, three of them corroborated with the present study (Lamiaceae, Fabaceae and Myrtaceae).

Among the species mentioned in this survey, 66,7% of them occur in the Cerrado as native vegetation, emphasizing their importance as medicinal source; whereas 17,5% are cultivated species, which are mostly found in the backyards of the properties. Oliveira *et al.* (2010a) carried out a study about the plants used by the population in twenty-one rural communities from Oeiras (state of Piauí, Brazil), located in the transitional area of Caatinga/Cerrado vegetation, and showed that 65,86% of them belong to native vegetation and 32,33% are cultivated.

Cerrado is represented by several pharmacologically active species; however, there is a lack of studies on their identification and on the bioactive components produced by them. Considering the vast degradation of the vegetation in this biome,

along with the lack of information regarding its potentialities, the ethnobotanical study carried out in rural and traditional communities becomes an important tool. It identifies the flora, registers the inhabitants' knowledge on the uses of species and adds value while promoting the development, all of these based on the proposal of protection of both natural resources and the intrinsic knowledge of these populations.

The 105 species registered in this study were framed in 11 categories, or body systems, such as: Certain infectious and parasitic diseases; Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; Diseases of the circulatory system; Diseases of the digestive system; Diseases of the genitourinary system; Diseases of the musculoskeletal system and connective tissue; Diseases of the nervous system; Diseases of the respiratory system; Diseases of the skin and subcutaneous tissue; Endocrine, nutritional and metabolic diseases; Injury, poisoning and certain other consequences of external causes; Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified.

Considering the proposal to value the vegetation of the Cerrado, the Informant Consensus Factor (ICF), Relative Importance (IR) and Relative Frequency of Citation (FRC) of the species showed how much a community knows and uses the plants, being promising indicators for selection of species for biological and chemical studies.

The ICF is a quantitative measure that shows if medicinal plants are used for a great number of diseases, if there is a well-defined criterion for selecting them and if that usage and/or knowledge information is shared among the inhabitants of a community. The low value of ICF indicates that the informants do not agree about the use of a given species for the treatment of diseases within a category, that the plants are chosen at random, or that the informants do not exchange information about the use of certain species (Heinrich *et al.*, 1998, Silva & Proença, 2008). For this study, all categories had an ICF above 0.84, which demonstrated unity in the ethnomedicinal knowledge of the community; the greater the consensus about the therapeutic purpose of the species, the greater the chances of scientific validation of medicinal use. The closer the value for this index is to 1, the higher is the possibility that these species are common and present in the region, being regularly used by the population (Oliveira *et al.*, 2010).

The Certain Infectious and Parasitic Diseases category had an ICF maximum equal to 1, since there was only one informant for the species mentioned (*Nicotiana tabacum* L.). Among the other categories Injury, Poisoning and Certain Other consequences of External Causes presented the highest index (0.97), represented by the species *Mimosa gracilis* Benth and *Petiveria alliacea* L, followed by Diseases of the Nervous System (0.96), which include *Xanthosoma sagittifolium* (L.) Schott and *Foeniculum vulgare* Mill.

The category Certain Infectious and Parasitic Diseases was the most indicated one, followed by Diseases of the Respiratory System, Diseases of the Digestive System, Diseases of the Skin and Subcutaneous Tissue and Diseases of the Genitourinary System. Rodrigues & Andrade (2014), in an ethnobotanical survey carried out in the Inhamã Community, Pernambuco, Brazil Northeastern, showed that among 155 species, 46 referred to the Diseases of the Respiratory System and 35 to Diseases of the Digestive System. Almeida & Albuquerque (2002) considered main categories the Disorders Circulatory System, Respiratory System Disorders, Disorders and Pains not Defined, Genitourinary System Disorders and Digestive System Disorders.

Respiratory Tract Disorders, Digestive Tract Disorders and Skin and Subcutaneous Tissue Diseases are categories commonly related to the species studied, once their diseases are often treated with homemade medication due to several factors, such as cultural and social ones (difficulty of access to hospitals; low income) (Alburquerque & Almeida, 2002). In the Coqueiros Community elderly people who practice rural activities, have low level of education and live in homes with lack of basic sanitation. Therefore, they often develop chronic, inflammatory and infectious diseases, and need to search for natural treatments.

Many therapeutic properties indicated by the Coqueiros Community are also reported in scientific works. This demonstrates the importance of using the popular knowledge as an indicator for the bioprospecting studies, resulting in a faster process of biotechnology development. On the other hand, some species of this study did not provide relevant scientific records to medical treatments. This fact reinforces the need for studies of their biological effects because the popular indications provide the discovery of new potentials.

The RI is a quantitative method that reveals

the importance of a species based on their versatility. In other words, it is an index determined by the number of medicinal properties (uses) mentioned by the interviewed (Bennett & Prance, 2000). The higher the value of RI, the more promising are the species for bioprospecting because they are usually more known and used by the community.

In this study, the RI ranged from 0.25 to 2.0, in which four species (3,7%) presented RI > 1.0 *(Kielmeyra. coriacea*; *Pterodon emarginatus*; *Sechium edule* and *Xanthosoma sagittifolium*). These numbers demonstrated how many medicinal properties were listed for the species by the informants. In addition, seven species (6.4%) presented RI > 0.8 (*Cochlospermum regium*, *Cochlospermum pubescens*, *Crocus sativus*, *Croton antisyphiliticus*, *Petroselinum crispum*, *Strychnus pseudoquina* and *Sysygium cumini*). Finally, 38 species (34,9%) presented RI of 0.25. In a study done in the Feira de Caruaru (state of Pernambuco, Brazil), Almeida & Albuquerque (2002) identified 114 species and nine of them presented RI > 1.0. Rodrigues & Andrade (2014) also carried out a survey in Pernambuco, in the rural community of Inhamã, located in the municipality of Abreu e Lima, where 11 species presented RI > 1.0, in a total of 115 registered.

Finally, the FRC reflects how much the community knows about each species, being an important indicator of which plants have more common medicinal uses (Bieski *et al.*, 2012). Thus, in this survey the species *Kielmeyra coriacea* (1.0), *Mentha* × *piperita* L. (1.0), *Cochlospermum regium* (0.97), *Sechium edule* (0.94), *Caryocar brasiliense* A.St.-Hil. (0.94), *Croton antisyphiliticus* (0.94), *Bidens pilosa* L. (0.94), *Pterodon emarginatus* (0.84) and *Hymenaea stigonocarpa* Hayne (0.81) were the most cited by Coqueiros Community for various diseases, as shown below.

Kielmeyra. coriacea was cited for various diseases such as intestinal infection, diarrhea, leukemia, anemia, gastritis, stomach pain, gum pain, tooth pain, cavities, arthritis, arthrosis, healing, vermifuge, kidney pain, rheumatism, uterus infections, antibiotic, problems in the skin, ringworm and all types of infections. In relation to the problems that affect the mouth, there is scientific data that confirms the use of this species. According to Aquino *et al.* (2013) the ethanolic extract of the outer bark inhibited the growth of an important agent that causes cavities, *Staphylococcus mitis* (ATCC 49456), with a value of Minimum Inhibitory Concentration (MIC) 3,1 µg mL^{-1}. It was also reported the cyclohexane fraction of this extract inhibited the growth of the aerobic oral bacteria *Staphylococcus mutans* (ATCC 25175) and *Staphylococcus sanguinis* (ATCC 10566) and the anaerobic oral bacterium *Actinomyces naesllundi* (ATCC 19039) (all with MIC 6,2 µg mL^{-1}). This antibacterial activity may be associated to the phenolic compounds, flavonoids and tannins, in synergism with other natural products (Aquino *et al.*, 2013). Therefore, the identification of phenolic compounds in this species and the anti-inflammatory action proved for this class (Lang & Buchbauer, 2012) may explain the popular use of this plant for the treatment of rheumatism, arthritis and arthrosis. The medicinal property antiulcer of *K. coriacea* may come from the protective effect of gastric mucosa that was observed in tests done in mice, in which gastric lesions were induced by necrotizing agents (Goulart *et al.*, 2005).

Mentha x piperita was mentioned by the Coqueiros Community for the control of fever. It may be related to the analgesic and anti-inflammatory effects that this species presents (Atta & Alkofahi, 1998). Besides this species is associated with other biological activities, such as spasmolytic, antivomitive, carminative, stomach, antihelminthic, antibacterial, antifungal, anti-rust, antispasmodic, anti-inflammatory, antiviral and antiulcer (Lorenzi & Matos, 2008).

Cocholospermum regium was mentioned by the interviewed people from Coqueiros Community for the control of gastritis, ulcer, kidney and uterus infections. With the administration of the flavonoid 3-*O*-glucopyranosyl diidrocanferol, isolated from the rhizome of *Cocholospermum regium*, Castro *et al.*, (2004) noted that there was a reduction in the number of abdominal contortions in mice, proving the antinoceptive action. *Cocholospermum regium* also exhibited antifungal activity showed in a test to antibiotics in medicinal plants (STAMP method) carried out against *Candida albicans* ATCC 10231 (Fernandes *et al.*, 2016).

Sechium edule was recommended for the control of blood pressure, diuretic (decrease of swelling and the rate of glucose in the blood) and to soften skin allergies. In the literature, there are studies that demonstrate that this species acts to decrease blood pressure (Lorenzi & Matos, 2008). There are also studies that proved its antidiabetic activity. It was evaluated the action of the extract of the leaves in tests with mice, which when metabolized in the liver, produced metabolites

reactive with oxidizing properties, and contributed to the reduction in glycemic load (Diré *et al.*, 2007). Thus, this characteristic may be related to the diuretic property mentioned by the Community. Finally, the antioxidant action was also studied and proved for ethanolic extract of leaves (Ordoñez *et al.*, 2006).

Cariocar brasiliense is used in the control of diabetes, antitussive and bronchitis. The crude extract of its leaves presents antioxidant action. Besides, it also shows antimicrobial activity: in a concentration of 11,25 mg mL^{-1}, it inhibits the growth of *Escherichia coli* and *Staphylococcus aureus*; and in a concentration of 22.50 mg mL^{-1}, it inhibits the growth of *Pseudomonas aeruginosa* (Amaral *et al.*, 2014). Therefore, it can be efficient in the treatment of respiratory infections. In addition, there are studies that report the antioxidant and anti-inflammatory potentials of the oil extracted from the seed of this species, which significantly reduced the liver damage induced in mice, suggesting that it may partially protect the hepatocytes against the toxic effects, increasing antioxidant defenses (Torres *et al.*, 2016). Furthermore, this oil has the potential to prevent liver cancer, too, because it exerts a hepatoprotective effect against the induced development of preneoplastic and adenone lesions in mice, reducing them by 51% through the treatment of subjects with 400 mg kg^{-1} daily oil for 25 consecutive weeks (Breda *et al.*, 2016).

Croton antisyphiliticus was cited for the treatment of influenza, uterus infection and antibiotic. According to literature, this species presents anti-inflammatory activities as it inhibited the activated leukocyte in an experimental model of induced pleurisy in mice (Reis *et al.*, 2014).

Bidens pilosa is used for the control of anemia, jaundice, liver treatment and depurative of blood. In some studies, it was examined the potential of this plant, demonstrating that this species has hepatoprotective and anti-inflammatory, antibacterial and analgesic activities (Owoyemi & Oladunmoye, 2017, Falowo *et al.*, 2019). Don´t have estudies recents for this specie. Therefore, the knowledge of the Coqueiros Community is quite similar to the scientific one.

Pterodon emarginatus was recommended as an antibiotic, for the treatment of throat infection, anemia, rheumatism, acne and weight loss. For this species, some relevant studies were found proving the anti-inflammatory (Pascoa *et al.*, 2015) and antimicrobial (Dutra *et al.*, 2009) potentials. According to Bustamante *et al.* (2010), the ethanolic extract from the outer bark presented antimicrobial activity (MIC of 0,18 mg mL^{-1} for gram positive bacteria *Rhodococcus equi* ATCC 25923, *Micrococcus luteus* ATCC 9341, *Micrococcus roseus* IPTSP/UFG and gram-negative bacteria *Serratia marcescens* ATCC 14756 and *Pseudomonas aeruginosa* ATCC 9027); MIC of 0,37 mg mL^{-1} for *Enterobacter cloacae* FT 505 LEMC/EPM/UFG and MIC of 0,74 mg mL^{-1} for the other bacteria tested and for the fungus *C. albicans*. In tests to evaluate the anti-inflammatory activity in mice, a swelling caused by the nystatin was induced, the hexane crude extract of fruit was administrated and presented a significant inhibition of 45% at the sixth hour. After this, the granuloma test was also carried out, in which there was an inhibition of the granulomatous tissue formation of 22%. Finally, there was an inhibition of the neutrophil migration into the peritoneal cavity of 43% (Carvalho *et al.*, 1999). In addition, studies also showed antioxidant (Dutra *et al.*, 2008), antiparasitic (Dutra *et al.*, 2009), antinociceptive (Oliveira *et al.*, 2012b) potentials; inhibitory effect of penetration of cercaria of schistosomiasis in human skin (Lorenzi & Matos, 2008), and larvicide against *Aedes aegypti* (Oliveira *et al.*, 2017).

Hymenaea stigonocarpa was mentioned to combat the cough and healing. According to the literature (Orsi *et al.*, 2014), the hydroalcoholic extract from the stem bark of this species presented effect on ultrastructure of *Staphylococcus aureus* ATCC 33591. It was also proved the intestinal anti-inflammatory action of the methanol extract of stem bark at dose of 100 and 200 mg kg^{-1} and 10% fruit pulp flour (Orsi *et al.*, 2014). This species presented antimutagenic (Santana *et al.*, 2016) and gastroprotective (Martins *et al.*, 2015) effects as well.

CONCLUSIONS

The knowledge from the Coqueiros Community about medicinal plants is an indicator for their selection for scientific studies. Thus, its recognition is important to ensure the availability of this information for future generations. Besides, it can be used as research base and be validated scientifically, in order to development biotechnological products.

The present study shows plants species known by the Coqueiros Community that may be found in the Cerrado region, but also in other areas of vegetation. The species were evaluated by indexes, which reveal how this community knows and uses the flora, in addition to the consensus on therapeutic properties, and, therefore, a tool for the selection of

species for chemical and biological studies. In this context, in this study were recorded 105 species, of which only nine have no records in the literature on some biological activity; however, only a few species have provided a comprehensive assessment of the potential biological, emphasizing the importance of further investigations.

The knowledge etnobothanic recorded here allows the directing bioprospecting studies and indicates potential species for the development of biotechnology. The species considered more important to the informants are those that have action against the largest number of health problems within the community and, have the consensus of common use. Thus, the statistical indexes used with the intention of identifying these species, such as RI, ICF and FRC, contribute to the selection of these species.

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REFERENCES

Achola KJ, Munenge RW. 2008. Pharmacological activities of *Lantana trifolia* on isolated guinea pig trachea and rat phrenic nerve diaphragm. **Pharm Biol** 34: 273 - 276. **https://doi.org/10.1076/phbi.34.4.273.13219**

Adewole SO, Ojewole JAO. 2009. Protective effects of *Annona muricata* Linn. (Annonaceae) leaf aqueous extract on serum lipid profiles and oxidative stress in hepatocytes os streptozotocin treated diabetic rats. **Afr J Tradit Complement Altern Med** 6: 30 - 41. **https://doi.org/10.4314/ajtcam.v6i1.57071**

Afify AEMR, El-Beltagi HS, Fayed SA, Shalaby EA. 2011. Acaricidal activity of different extracts from *Syzygium cumini* L. Skeels (Pomposia) against *Tetranychus urticae* Koch. **Asian Pac J Trop Biomed** 1: 359 - 364. **https://doi.org/10.1016/s2221-1691(11)60080-4**

Agada F, Muhammad C, Uba A, Mshelia HE, Zubairu HL. 2018. Comparative antiproliferative activity of leaf and stem bark extracts of *Detarium senegalense* and leaf of *Cymbopogon citratus*. **Cancer Res J** 6: 38 - 46. **https://doi.org/10.11648/j.crj.20180602.11**

Ahmad I, Basra SMA, Akram M, Wasaya A, Hussain SA, Iqbal A. 2016. Alleviation of oxidative stresses by potassium fertilizer in spring maize under early and late sown conditions. **Bangladesh J Scient Ind Res** 51: 101 - 110. **https://doi.org/10.3329/bjsir.v51i2.28091**

Aladdin A, Yarar E, Batool T, Al-Astal HIM, Almatar M, Makky EA. 2017. Antiulcerogenic activity of *Ageratum conyzoides*: A review. **J Biotechnol Sci Res** 4: 204 - 213.

Alam S, Asad M, Asdaq SMB, Prasad VS. 2009. Antiulcer activity of methanolic extract of *Momordica charantia* L. in rats. **J Ethnopharmacol** 123: 464 - 469. **https://doi.org/10.1016/j.jep.2009.03.024**

Albuquerque UP, Andrade LHC. 2002. Conhecimiento botânico tradicional e conservação em uma área de Caatinga no estado de Pernambuco, Nordeeste do Brasil. **Acta Bot Bras** 16: 273 - 285.

Albuquerque UP, Ramos MA, Melo JG. 2013. New strategies for drug discovery in tropical forests based on ethnobotanical and chemical ecological studies. **J Ethnopharmacol** 146: 842 - 852. **https://doi.org/10.1016/j.jep.2011.12.042**

Almeida AC, Andrade VA, Fonseca FSA, Macêdo AA, Santos RL, Colen KGF, Martins ER, Marcelo NA. 2017. Acute and chronic toxicity and antimicrobial activity of the extract of *Stryphnodendron adstringens* (Mart.) Coville. **Pesq Vet Bras** 37: 840 - 846. **https://doi.org/10.1590/s0100-736x2017000800010**

Almeida CFCBR, Albuquerque UP. 2002. Uso e conservação de plantas e animais medicinais no estado de Pernambuco (Nordeste do Brasil): um estudo de caso. **Interciencia** 26: 276 - 285.

Almeida MZ, Léda PHO, Silva MQOR. 2014. Species with medicinal and mystical-religious uses in São Francisco do Conde, Bahia, Brazil: a contribution to the selection of species for introduction into the local Unified Health System. **Rev Bras Farmacogn** 24: 159 - 170. **https://doi.org/10.1016/j.bjp.2014.04.006**

Almeida KB, Araujo JL, Cavalcanti JF, Romanos MTV, Mourão SC, Amaral ACF, Falcão DQ. 2018. *In vitro* release and anti-herpetic activity of *Cymbopogon citratus* volatile oil-loaded nanogel. **Rev Bras Farmacogn** 28: 495 - 502. **https://doi.org/10.1016/j.bjp.2018.05.007**

Alves CCF, Oliveira JD, Estevam EBB, Xavier MN, Nicolella HD, Furtado RA, Tavares DC, Miranda MLD. 2019. Antiproliferative activity of essential oils from three plants of the Brazilian Cerrado: *Campomanesia adamantium* (Myrtaceae), *Protium ovatum* (Burseraceae) and *Cardiopetalum calophyllum* (Annonaceae). **Braz J Biol** 80: 1 - 5. **https://doi.org/10.1590/1519-6984.192643**

Alves TMA, Silva AF, Brandão M, Grandi TSM, Smânia EF, Smânia-Júnior A, Zani CL. 2000. Biological screening of Brazilian medicinal plants. **Mem Inst Oswaldo Cruz** 95: 367 - 373. **https://doi.org/10.1590/s0074-02762000000300012**

Al-Mofleh I, Alhaider A, Mossa J, Al-Sohaibani M, Qureshi S, Rafatullah S. 2006. Antisecretagogue, antiulcer and cytoprotective effects of "peppermint" *Mentha piperita* L. in laboratory animals. **J Med Sci** 6: 930 - 936. **https://doi.org/10.3923/jms.2006.930.936**

Al-Howiriny TA, Al-Sohaibani MO, El-Tahir KH, Rafatullah S. 2003. Preliminary evaluation of the anti-inflammatory and anti-hepatotoxic activities of "Parsley" *Petroselinum crispum* in rats. **J Nat Remedies** 3: 54 - 62.

Amabye TG, Shalkh TM. 2015. Phytochemical screening and evaluation of antibacterial activity of *Ruta graveolens* L. - A medicinal plant grown around Mekelle, Tigray, Ethiopia. **Nat Prod Chem Res** 3: 3 - 6. **https://doi.org/10.4172/2329-6836.1000195**

Amaral LFB, Moriel P, Foglio MA, Mazzola PG. 2014. *Caryocar brasiliense* supercritical CO_2 extract possesses antimicrobial and antioxidant properties useful for personal care products. **BMC Complem Altern Med** 14: 1 - 7. **https://doi.org/10.1186/1472-6882-14-154**

Amparo TR, Rodrigues IV, Seibert JB, Souza HZ, Oliveira AR, Cabral VAR, Vieira PMA, Brandão GC, Okuma AA, Vieira-Filho SA, Teixeira LFM, Souza GHB. 2018. Antibacterial activity of extract and fractions from branches of *Protium spruceanum* and cytotoxicity on fibroblasts. **Nat Prod Res** 32: 1951 - 1954. **https://doi.org/10.1080/14786419.2017.1354182**

Andrade AF, Alves JM, Corrêa MB, Cunha WR, Veneziani RC, Tavares DC. 2016. *In vitro* cytotoxicity, genotoxicity and antigenotoxicity assessment of *Solanum lycocarpum* hydroalcoholic extract. **Pharm Biol** 54: 2786 - 2790. **https://doi.org/10.1080/13880209.2016.1175022**

Andrade TM, Melo AS, Dias RGC, Varela ELP, Oliveira FR, Vieira JL, Andrade MA, Baetas AC, Monteiro MC, Maia CSP. 2012. Potential behavioral and pro-oxidant effects of *Petiveria alliacea* L. extract in adult rats. **J Ethnopharmacol** 143: 604 - 610. **https://doi.org/10.1016/j.jep.2012.07.020**

Anese S, Jatobá LJ, Grisi PU, Gualtieri SCJ, Santos MFC, Berlinck RGS. 2015. Bioherbicidal activity of drimane sesquiterpenes from *Drimys brasiliensis* Miers roots. **Ind Crop Prod** 74: 28 - 35. **https://doi.org/10.1016/j.indcrop.2015.04.042**

Aquino FJT, Martins CM, Morais SAL, Cunha LCS, Aloise GRG, Chang R, Oliveira TSM, Cunha WR, Martins CHG. 2013. Antioxidant and antimicrobial activity of *Kielmeyera coriacea* Mart. and. Zucc. **J Med Plants Res** 7: 2722 - 2728. **https://doi.org/10.5897/jmpr2013.4480**

Araujo CEP, Bela RT, Bueno LJF, Rodrigues RFO, Shimizu MT. 2006. Anti-ulcerogenic activity of the aerial parts of *Lithraea molleoides*. **Fitoterapia** 77: 406 - 407. **https://doi.org/10.1016/j.fitote.2006.05.011**

Araújo DRC, Silva LCN, Harand W, Fernandes JW, Soares TC, Langassner SMZ, Giordani RB, Ximenes RM, Silva AG, Silva MV, Correia MTS. 2017. Effects of Rainfall on the antimicrobial activity and secondary metabolites contents of leaves and fruits of *Anadenanthera colubrina* from caatinga area niel Rodrigo Cavalcante. **Pharmacogn J** 9: 435 - 440. **https://doi.org/10.5530/pj.2017.4.73**

Arogba SS, Omede A. 2012. Comparative antioxidant activity of processed mango (*Mangifera indica*) and bush mango (*Irvingia gabonensis*) Kernels. **Niger Food J** 30: 17 - 21. **https://doi.org/10.1016/s0189-7241(15)30029-1**

Arunachalam K, Damazo AS, Pavan E, Oliveira DM, Figueiredo FF, Machado MTM, Balogun SO, Soares IM, Barbosa RS, Alvim TC, Ascêncio SD, Martins DTO. 2019. *Cochlospermum regium* (Mart. ex Schrank) Pilg.: Evaluation of chemical profile, gastroprotective activity and mechanism of action of hydroethanolic extract of its xylopodium in acute and chronic experimental models. **J Ethnopharmacol** 233: 101 - 114. **https://doi.org/10.1016/j.jep.2019.01.002**

Asadollahi M, Nikdokht P, Hatef B, Sadr SS, Sahraei H, Assarzadegan F, Jahromi GP. 2019. Protective properties of the aqueous extract of saffron (*Crocus sativus* L.) in ischemic stroke, randomized clinical trial. **J Ethnopharmacol** 238: 1 - 10. **https://doi.org/10.1016/j.jep.2019.111833**

Ataee R, Falahati A, Ebrahimzadeh MA, Shokrzadeh M. 2016. Anticonvulsant activities of *Sambucus nigra*. **Eur Rev Med Pharmacol Sci** 20: 3123 - 3126.

Atale N, Chakraborty M, Mohanty S, Bhattacharya S, Nigam D, Sharma M, Rani V. 2013. Cardioprotective role of *Syzygium cumini* against glucose-induced oxidative stress in H_9C_2 cardiac myocytes. **Cardiovasc Toxicol**

13: 278 - 289. **https://doi.org/10.1007/s12012-013-9207-1**

Atale N, Rani V. 2016. *Syzygium Cumini*: An effective cardioprotective via its antiglycoxidation potential. **Int J Pharm Sci Res** 37: 42 - 51.

Atta AH, Alkofahi A. 1998. Anti-nociceptive and anti-inflammatory effects of some Jordanian medicinal plant extracts. **J Ethnopharmacol** 60: 117 - 124. **https://doi.org/10.1016/s0378-8741(97)00137-2**

Azeredo CM, Santos T, Maia BHLNS, Soares MJS. 2014. In vitro biological evaluation of eight different essential oils against *Trypanosoma cruzi*, with emphasis on *Cinnamomum verum* essential oil. **BMC Complem Altern Med** 14: 1 - 8. **https://doi.org/10.1186/1472-6882-14-309**

Babu PR, Bhuvaneswar C, Sandeep G, Ramaiah C, Rajendra W. 2017. Hepatoprotective role of *Ricinus communis* leaf extract against D-galactosamine induced acute hepatitis in albino rats. **Biomed Pharmacother** 88: 658 - 666. **https://doi.org/10.1016/j.biopha.2017.01.073**

Baghshahi H, Riasi A, Mahdavi AH, Shirazi A. 2014. Antioxidant effects of clove bud (*Syzygium aromaticum*) extract used with different extenders on ram spermatozoa during cryopreservation. **Cryobiology** 69: 482 - 487. **https://doi.org/10.1016/j.cryobiol.2014.10.009**

Bakht J, Shafi M. 2012. Antimicrobial Activity of *Nicotiana tabacum*. **Pak J Bot** 44: 459 - 463.

Baldissera G, Sperotto NDM, Rosa HT, Henn JG, Peres VF, Moura DJ, Roehrs R, Denardin ELG, Lago PD, Nunes RB, Saffi J. 2016. Effects of crude hydroalcoholic extract of *Syzygium cumini* (L.) skeels leaves and continuous aerobic training in rats with diabetes induced by a high-fat diet and low doses of streptozotocin. **J Ethnopharmacol** 194: 1012 - 1021. **https://doi.org/10.1016/j.jep.2016.10.056**

Bayani M, Ahmadi-HAmedani M, Jebelli A. 2017. Study of hypoglycemic, hypocholesterolemic and antioxidant activities of Iranian *Mentha spicata* leaves aqueous extract in diabetic rats. **Iran J Pharm Res** 16: 75 - 82.

Bannwart G, Oliveira CMA, Kato L, SilvA CC, Ruiz ALTG, Carvalho JE, Santin SMO. 2013. Antiproliferative activity and constituents of *Aspidosperma macrocarpon* (Apocynaceae) Leaves. **Rec Nat Prod** 7: 137 - 140.

Banno N, Akshihiro T, Tokuda H, Yasukawa K, Taguchi Y, Akazawa H, Ukiya M, Kimura Y, Suzuki T, Nishino H. 2005. Anti-inflammatory and antitumor-promoting effects of the triterpene acids form the leaves of *Eriobotrya japonica*. **Biol Pharm Bull** 28: 1995 - 1999. **https://doi.org/10.1248/bpb.28.1995**

Batista AG, Ferrari AS, Cunha DC, Silva JK, Cazarin CBB, Correa LC, Prado MA, Carvalho-Silva LB, Esteves EA, Maróstica Júnior MR. 2016. Polyphenols, antioxidants, and antimutagenic effects of *Copaifera langsdorffii* fruit. **Food Chem** 197: 1153 - 1159. **https://doi.org/10.1016/j.foodchem.2015.11.093**

Barbosa AM, Santos KS, Borges GB, Muniz AVCS, Mendonça FMR, Pinheiro MS, Franceschi E, Dariva C, Padilha FF. 2019. Separation of antibacterial biocompounds from *Hancornia speciose* leaves by a sequential process of pressurized liquid extraction. **Sep Purif Technol** 22: 390 - 395. **https://doi.org/10.1016/j.seppur.2019.04.022**

Barrosa KH, Mecchi MC, Rando DG, Ferreira AJS, Sartorelli P, Valle MMR, Bordin S, Caperuto LC, Lago JHG, Lellis-Santos C. 2016. Polygodial, a sesquiterpene isolted from *Drimys brasiliensis* (Winteraceae), triggers glucocorticoid-like effects on pacndreatic β-cells. **Chem-Biol Interact** 258: 245 - 256. **https://doi.org/10.1016/j.cbi.2016.09.013**

Bekalo TH, Woodmatas SD, Woldemariam ZA. 2009. An ethnobotanical study of medicinal plants used by local people in the lowlands of Konta Special Woreda, southern nations, nationalities and peoples regional state, Ethiopia. **J Ethnobiol Ethnomed** 5: 1 - 15. **https://doi.org/10.1186/1746-4269-5-26**

Benites J, Moiteiro C, Miguel G, Rojo L, López J, Venâncio F, Ramalho L, Feio S, Dandlen S, Casanova H, Torres I. 2009. Composition and biological activity of the essential oil of peruvian *Lantana camara*. **J Chil Chem Soc** 54: 379 - 384. **https://doi.org/10.4067/s0717-97072009000400012**

Bennett BC, Prance GT. 2000. Introduced plants in the indigenous pharmacopoeia of Northern South America. **Econ Bot** 54: 90 - 102. **https://doi.org/10.1007/bf02866603**

Bento EB, Brito Júnior FE, Oliveira DR, Fernandes CN, Delmondes GA, Cesário FRAS, Rodrigues CKS, Sales VS, Figueiredo FRSDN, Lemos ICS, Monteiro ÁB, Menezes IRA, Costa JGM, Kerntopf MR. 2018. Antiulcerogenic activity of the hydroalcoholic extract of leaves of *Annona muricata* Linnaeus in mice. **Saudi J Biol Sci** 55: 609 - 621. **https://doi.org/10.1016/j.sjbs.2016.01.024**

Beserra S, Vilegas W, Tangerina MMP, Ascêncio SD, Soares IM, Pavan E, Damazo AS, Ribeiro RV, Martins DTO. 2018. Chemical characterisation and toxicity assessment *in vitro* and *in vivo* of the hydroethanolic

extract of *Terminalia argentea* Mart. leaves. **J Ethnopharmacol** 227: 56 - 58. **https://doi.org/10.1016/j.jep.2018.08.025**

Biesdorf C, Cortez DAG, Audi EA. 2012. Phytomedicine assessment of anxiolytic and panicolytic effects of dichloromethane fraction from stems of *Kielmeyera coriacea*. **Eur J Integr Med** 19: 374 - 377.

Bieski IGC, Santos FR, Oliveira RM, Espinosa MM, Macedo M, Albuquerque UP, Martins DTO. 2012. Ethnopharmacology of medicinal plants of the Pantanal Region (Mato Grosso, Brazil). **Evid Based Complement Altern Med** 1 - 36. **https://doi.org/10.1155/2012/272749**

Bieski IG, Leonti M, Arnason JT, Ferrier J, Rapinski M, Violante IMP, Balogun SO, Pereira JFCA, Figueiredo RCF, Lopes ARAS, Silva DR, Pacini A, Albuquerque UP, Martins DTO. 2015. Ethnobotanical study of medicinal plants by population of Valley of Juruena Region, Legal Amazon, Mato Grosso, Brazil. **J Ethnopharmacol** 173: 383 - 423. **https://doi.org/10.1016/j.jep.2015.07.025**

Bing L, Guo-Cai W, JI Y, Mao-Xin Z, Guang-Wen L. 2008. Antifeedant activity and active ingredients against *Plutella xylostella* from *Momordica charantia* leaves. **Agric Sci China** 7: 1466 - 1473. **https://doi.org/10.1016/s1671-2927(08)60404-6**

Blainski A, Piccolo VK, Mello JCP, Oliveira RMW. 2010. Dual effects of crude extracts obtained from *Petiveria alliacea* L. (Phytolaccaceae) on experimental anxiety in mice. **J Ethnopharmacol** 128: 541 - 544. **https://doi.org/10.1016/j.jep.2010.01.012**

Boff L, Silva IT, Argenta DF, Farias LM, Alvarenja LF, Pádua RM, Braga FC, Leite JPV, Kratz JM, Simões CMO. 2016. *Strychnos pseudoquina* A. St. Hil.: a Brazilian medicinal plant with promising in vitro antiherpes activity. **J Appl Microbiol** 121: 1519 - 1529. **https://doi.org/10.1111/jam.13279**

Bolson M, Hfler SR, Chaves EIAO, Gasparotto-Júnior A, Cardozo-Júnior ELC. 2015. Ethno-medicinal study of plants used for treatment of human ailments, with residents of the surrounding region of forest fragments of Paraná, Brazil. **J Etnopharmacol** 161: 1 - 10. **https://doi.org/10.1016/j.jep.2014.11.045**

Borges JC, Perim MC, Castro RO, Araújo TAS, Araújo DS, Peixoto Sobrinho TJS, Silva ACO, Mariano SMB, Carreiro SC, Pranchevicius MCS. 2017. Evaluation of antibacterial activity of the bark and leaf extracts of *Brosimum gaudichaudii* Trécul against multidrug resistant strains. **Nat Prod Res** 31: 2931 - 2935. **https://doi.org/10.1080/14786419.2017.1305379**

Brai BIC, Odetola AA, Agomo PU. 2013. Effects of *Persea americana* leaf extracts on body weight and liver lipids in rats fed hyperlipidaemic diet. **African J Biotechnol** 6: 1007 - 1011.

Brahmi F, Hadj-Ahmed S, Zarrouk A, Bezine M, Nury T, Madani K, Chibane M, Vejux A, Andreoletti P, Boulekbache-Makhlouf L, Lizard G. 2017. Evidence of biological activity of Mentha species extracts on apoptotic and autophagic targets on murine RAW264.7 and human U937 monocytic cells. **Pharm Biol** 55: 286 - 293. **https://doi.org/10.1080/13880209.2016.1235208**

Breda CA, Gasperni AM, Garcia VL, Monteiro KM, Bataglion GA, Eberlin MN, Duarte MCT. 2016. Phytochemical analysis and antifungal activity of extracts from leaves and fruit residues of Brazilian Savanna Plants aiming its use as safe fungicides. **Nat Prod Bipropect** 6: 195 - 204. **https://doi.org/10.1007/s13659-016-0101-y**

Brito FA, Lima LA, Ramos MFS, Nakamura MJ, Cavalher-Machado SC, Siani AC, Henriques MGMO, Sampaio ALF. 2007. Pharmacological study of anti-allergic activity of *Syzygium cumini* (L.) Skeels. **Braz J Med Biol Res** 40: 105 - 115. **https://doi.org/10.1590/s0100-879x2007000100014**

Bustamante KGL, Lima ADF, Soares ML, Fiuza TS, Tresvenzol LMF, Bara MTF, Pimenta FC, Paula, JR. 2010. Avaliação da atividade antimicrobiana do extrato etanólico bruto da casca da sucupira branca (*Pterodon emarginatus* Vogel) - Fabaceae. **Rev Bras Plant Med** 12: 341 - 345. **https://doi.org/10.1590/s1516-05722010000300012**

Camejo-Rodrigues JS. 2001. **Contribuição para o estudo etnobotânico das plantas medicinais e aromáticas no Parque Natural da Serra de Sao Mamede.** Relatório de Estágio. ICN-PNSSM, Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal.

Cândido LN, Silva MR, Agostini-Costa TS. 2015. Bioactive compounds and antioxidant capacity of buriti (*Mauritia flexuosa* L. f.) from the Cerrado and Amazon biomes. **Food Chem** 177: 313 - 331. **https://doi.org/10.1016/j.foodchem.2015.01.041**

Cardoso CAL, Salmazzo GR, Honda NK, Prates CB, Vieira MC, Coelho RG. 2010. Antimicrobial activity of the extracts and fractions of hexanic fruits of Campomanesia species (Myrtaceae). **J Med Food** 13: 1273 -

1276. **https://doi.org/10.1089/jmf.2009.0047**

Carneiro CC, Silva CR, Menezes ACS, Pérez CN, Chen-Chen L. 2013. Assessment of genotoxic, cytotoxic, and protective effects of *Salacia crassifolia* (Mart. Ex. Schult.) G. Don. stem bark fractions in mice. Genet. **Mol Res** 12: 2167 - 2177. **https://doi.org/10.4238/2013.july.3.1**

Carneiro CC, Véras JH, Góes BR, Pérez CN, Chen-Chen L. 2018. Mutagenicity and antimutagenicity of *Salacia crassifólia* (mart. Ex. Schult.) G. Don. evaluated by Ames test. **Braz J Biol** 78: 345 - 350**.** **https://doi.org/10.1590/1519-6984.166593**

Carrillo-Rosario T, Ramírez AD. 2006. Actividad antimalárica de extractos acuosos de *Lantana camara* L., *Verbena littoralis* L. y *Heliotropium indicum* L. en ratones infectados con *Plasmodium berghei*. **Rev Fac Med** 48: 14 - 20.

Carvalho-Freitas MIR, Costa M. 2001. Anxiolytic and sedative effects of extracts and essential oil from *Citrus aurantium* L. **Biol Pharm Bull** 25: 1629 - 1633. **https://doi.org/10.1248/bpb.25.1629**

Carvalho JCT, Sertié JAA, Barbosa MVJ, Patrício KCM, Caputo LRG, Sarti SJ, Ferreira LP, Bastos JK. 1999. Anti-inflammatory activity of the crude extract from the fruits of *Pterodon emarginatus* Vog. **J Ethnopharmacol** 64: 127 - 133. **https://doi.org/10.1016/s0378-8741(98)00116-0**

Carvalho OS, Miranda MA, Silva LB, Chrysostomo-Massaro TN, Paschoal JAR, Bastos JK, Marcato PD. 2019. *In vitro* anticancer activity and physicochemical properties of *Solanum lycocarpum* alkaloidic extract loaded in natural lipid-based nanoparticles. **Colloid Interfac Sci** 28: 5 - 14. **https://doi.org/10.1016/j.colcom.2018.11.001**

Castro DB, Santos DB, Ferreira HD, Santos SC, Chen-Chen L. 2004. Atividades mutagênica e citotóxica do extrato de *Cochlospermum regium* Mart. (algodãozinho-do-campo) em camundongos. **Rev Bras Plant Med** 6: 15 - 19.

Caxito MLC, Correia RR, Gomes ACC, Justo G, Coelho MGP, Sakuragui CM, Kuster RM, Sabino KCC. 2015. *In vitro* antileukemic activity of *Xanthosoma sagittifolium* (Taioba) leaf extract. **Evid Based Complement Altern Med** 1 - 10. **https://doi.org/10.1155/2015/384267**

Charneau S, De Mesquita ML, Bastos IMD, Santana JM, Paula, JE, Grellier P, Espindola LS. 2016. In vitro investigation of Brazilian Cerrado plant extract activity against *Plasmodium falciparum*, *Trypanosoma cruzi* and *T. brucei gambiense*. **Nat Prod Res** 30: 1320 - 1326. **https://doi.org/10.1080/14786419.2015.1055264**

Chen H, Jiao H, Cheng Y, Xu K, Jia X, Shi Q, Guo S, Wang MDUL, Wang F. 2016. *In vitro* and *in Vivo* immunomodulatory activity of Okra (*Abelmoschus esculentus L.*) polysaccharides. **J Med Food** 19: 253 - 265. **https://doi.org/10.1089/jmf.2015.3513**

Choudhury S, Poddar SK, Zaheen S, Noor FA, Ahmed N, Haque S, Sukul A, Sunjida SB, Mazumder MMU, Akbar N. 2017. Phytochemical screening and evaluation of cytotoxic and hypoglycemic properties of *Mangifera indica* peels. **Asian Pac J Trop Biomed** 7: 49 - 52. **https://doi.org/10.1016/j.apjtb.2016.09.009**

Christy AO Mojisola COC, Taiwo EO, Ola OO. 2016. The antimalaria effect of *Momordica charantia* L. and *Mirabilis jalapa* leaf extracts using animal model. **J Med Plants Res** 10: 344 - 350. **https://doi.org/10.5897/jmpr2016.6046**

Chrysargyris A, Xylia P, Botsaris G, Tzortzakis N. 2017. Antioxidant and antibacterial activities, mineral and essential oil composition of spearmint (*Mentha spicata* L.) affected by the potassium levels. **Ind Crop Prod** 103: 202 - 212. **https://doi.org/10.1016/j.indcrop.2017.04.010**

Chukwuocha UM, Fernández-Rivera O, Legorreta-Herrera M. 2016. Exploring the antimalarial potential of whole *Cymbopogon citratus* plant therapy. **J Ethnopharmacol** 193: 517 - 523. **https://doi.org/10.1016/j.jep.2016.09.056**

Coelho APD, Laughiinghouse HD, Kuhn AW, Boligon AA, Canto-Dorow TS, Silva ACF, Tedesco SB. 2017. Genotoxic and antiproliferative potential of extracts of *Echinodorus grandifloras* and *Sagittaria montevidensis* (Alismataceae). **Int J Cytol Cytosystem Cytogen** 70: 82 - 91. **https://doi.org/10.1080/00087114.2016.1275932**

Conforti F, StattI G A, Tundis R, Loizzo MR, Menichini F. 2007. *In vitro* activities of *Citrus medica* L. cv. Diamante (Diamante citron) relevant to treatment of diabetes and Alzheimer's disease. **Phytother Res** 21: 427 - 33. **https://doi.org/10.1002/ptr.2077**

Consentino M, Carcano E, Bombelli R, Lechinni S. 2008. Immunomodulatoy properties of *Achyrocline satureoides*

(La.) D.C. infusion: a study on human leukocytes. **J Ethnopharmacol** 116: 501 - 507.

Cordeiro KW, Felipe JL, Malange KF, Prado PR, Figueiredo PO, Garcez FR, Freitas KC, Garcez WS, Toffoli-Kadri MC. 2016. Anti-inflammatory and antinociceptive activities of *Croton urucurana* Baillon bark. **J Ethnopharmacol** 183: 128 - 135. **https://doi.org/10.1016/j.jep.2016.02.051**

Correia AF, Silveira D, Fonseca-Bazzo YM, Magalhães PO, Fagg CW, Silva CC, Gomes SM, Gandolfi L, Pratesi R, Nóbrega YKM. 2016. Activity of crude extracts from Brazilian cerrado plants against clinically relevant Candida species. **BMC Complem Altern Med** 16: 1 - 9. **https://doi.org/10.1186/s12906-016-1164-3**

Correia DS, Tempone AG, Reimão JQ, Taniwaki NN, Romoff P, Fávero OF, Sartorelli P, Mecch MC, Lago HG. 2011. Anti-leishmanial and anti-trypanosomal potential of polygodial isolated from stem barks of *Drimys brasiliensis* Miers (Winteraceae). **Parasitol Res** 109: 231 - 236. **https://doi.org/10.1007/s00436-010-2229-8**

Costa AV, Calábria LK, Furtado FB, Gouveia NM, Oliveira RJS, Oliveira VN, Beletti ME, Espindola FS. 2013. Neuroprotective effects of *Pouteria ramiflora* (Mart.) Radlk (Sapotaceae) extract on the brains of rats with streptozotocin-induced diabetes. **Metab Brain Dis** 28: 411 - 419. **https://doi.org/10.1007/s11011-013-9390-6**

Costa JGM, Nascimento EMM, Campos AR, Rodrigues FFG. 2011. Antibacterial activity of *Momordica charantia* (Curcubitaceae) extracts and fractions. **J Basic Clin Pharm** 2: 45 - 51.

Costa MA, Ishida K, Kaplum V, Koslyk EDA, Mello JCP, Ueda-Nakamura T, Dias Filho BP, Nakamura CV. 2010. Safety evaluation of proanthocyanidin polymer-rich fraction obtained from stem bark of *Stryphnodendron adstringens* (Barbatimão) for use as a pharmacological agent. **Regul Toxicol Pharmacol** 58: 330 - 335. **https://doi.org/10.1016/j.yrtph.2010.07.006**

Costa TR, Fernandes OFL, Santos SC, Oliveira CMA, Lião LM, Ferri PH, Paula JRP, Ferreira HD, SalES BHN, Silva MRR. 2000. Antifungal activity of volatile constituents of *Eugenia dysenterica* leaf oil. **J Ethnopharmacol** 72: 111 - 117. **https://doi.org/10.1016/s0378-8741(00)00214-2**

Crepaldi CG, Campos JLA, Albuquerque UP, Sales MF. 2016. Richness and ethnobotany of the family Euphorbiaceae in a tropical semiarid landscape of Northeastern Brazil. **South Afr J Bot** 102: 157 - 165. **https://doi.org/10.1016/j.sajb.2015.06.010**

Cuong TV, Chin KB. 2016. Effects of Annatto (*Bixa orellana* L.) seeds powder on physicochemical properties, antioxidant and antimicrobial activities of pork patties during refrigerated storage. **Korean J Food Sci Anim Resour** 36: 476 - 486. **https://doi.org/10.5851/kosfa.2016.36.4.476**

Cutillas AB, Carrasco S, Martinez-Gutierrez R, Tomas V, Tudela J. 2018. Thyme essential oils from spain: aromatic profile ascertained by GC-MS, and their antioxidante, antilipoxygenase and antimicrobial acitvities. **J Food Drug Anal** 2: 529 - 544. **https://doi.org/10.1016/j.jfda.2017.05.004**

Dantas ACS, Machado DMR, Araujo A.C, Oliveira-Junior RG, Lima-Saraiva SRG, Ribeiro LAA, Almeida JRGS, Horta MC. 2015. Acaricidal activity of extracts from the leaves and aerial parts of *Neoglaziovia variegata* (Bromeliaceae) on the cattle tick *Rhipicephalus (Boophilus) microplus*. **Rev Vet Sci** 100: 165 - 168. **https://doi.org/10.1016/j.rvsc.2015.04.012**

Delfanian M, Kenari RE, Sahari MA. 2016. Evaluation of antioxidant activity of loquat fruit (*Eriobotrya japonica* Lindl.) skin and the feasibility of their application to improve the oxidative stability of soybean oil. **J Food Sci Technol** 53: 2244 - 2252. **https://doi.org/10.1007/s13197-016-2181-4**

Della Torre A. Albuquerque LBL, Farrapo NM, Oshima-Franco Y, Santos MG, Tavares RVS, Rodas ACD, Dal-Belo CA, Cardoso CRP, Varanda EA, Groppo FC, Lopes PS. 2011. Mutagenicity induced by the hydroalcoholic extract of the medicinal plant *Plathymenia reticulata* Benth. **J Venom Anim Toxins** 17: 190 - 198. **https://doi.org/10.1590/s1678-91992011000200010**

Diré GF, Rodrigues JS, Oliveira JC, Vasconcelos SD, Siqueira PR, Duarte RM, Almeida MC, Fernandes ML, Bernando-Filho M. 2007. Efeitos biológicos de um extrato de chayotte em ratos Wistar com diabetes induzida: uma análise radiofarmacêutica. **Pak J Biol Sci** 10: 568 - 574.

Dutra RC, Braga FG, Coimbra ES, Silva AD, Barbosa NR. 2009. Atividades antimicrobiana e leishmanicida das sementes de *Pterodon emarginatus* Vogel. **Rev Bras Farmacogn** 19: 429 - 435. **https://doi.org/10.1590/s0102-695x2009000300016**

Dutra RC, Campos MM, Santos ARS, Calixto JB, 2016. Medicinal plants in Brazil: Pharmacological studies, drug discovery, challenges and perspectives. **Pharmacol Res** 112: 4 - 29.

https://doi.org/10.1016/j.phrs.2016.01.021

Dutra RC, Leite MN, Barbosa NR. 2008. Quantification of phenolic constituents and antioxidant activity of *Pterodon emarginatus* vogel seeds. **Int J Mol Sci** 9: 606 - 614. **https://doi.org/10.3390/ijms9040606**

El-Akhal F, Lalami AEO, Guemmouh R. 2015. Larvicidal activity of essential oils of *Citrus sinensis* and *Citrus aurantium* (Rutaceae) cultivated in Morocco against the malaria vector *Anopheles labranchiae* (Diptera: Culicidae). **Asian Pacific J Trop Dis** 5: 930 - 934. **https://doi.org/10.1016/s2222-1808(15)60815-5**

Eldalawy R. 2017. Quantitative estimation of rutin in rue (*Ruta graveolens* L.) cultivated in Iraq with the evaluation of its antioxidant activity. **Asian J Pharm Clin Res** 10: 2 - 4. **https://doi.org/10.22159/ajpcr.2017.v10i2.15726**

Espindola PPT, Rocha OS, Carollo CA, Schmitz WO, Pereira ZV, Vieira MC, Santos EL, Souza KP. 2016. Antioxidant and antihyperlipidemic effects of *Campomanesia adamantium* O. Berg Root. **Oxid Med Cell Longet** 1-8. **https://doi.org/10.1155/2016/7910340**

Essien EE, Thomas PS, Ascrizzi R, Setzer WN, Flamini G. 2018. *Senna occidentalis* (L) Link and *Senna hirsute* (L.) H. S. Irwin, Barneby: constituents of fruit essential oils anda antimicrobial activity. **Nat Prod Res** 33: 1637 - 1640. **https://doi.org/10.1080/14786419.2018.1425842**

Estrela FN, Silva KR, Cruz AC, Souza PF, Costa LO, Junqueira JGM, Leal GS, Paula L, Consolaro HN, Terezan AP, Severino VGP, Luiz-Ferreira A. 2017. Antiulcerogenic activity of species *Annona coriacea* Mart. and *Spiranthera odoratissima* A. St. Hil. **Arch Clin Gastroenterol** 3: 80 - 84. **https://doi.org/10.17352/2455-2283.000045**

Ezeonwumelu JOC, Ntale M, Ogbonnia SO, Agwu E, Tanayen JK, Kasozi KI, Okonkwo CO, Shodunke A, Akunne AA, Dafiewhare OE, Ebosie JC, Byarugaba F. 2017. *In vitro* antibacterial efficacy of *Bidens pilosa*, *Ageratum conyzoides* and *Ocimum suave* extracts against HIV/AIDS patients' oral bacteria in South-Western Uganda. **Pharmacol Pharm** 8: 306 - 323. **https://doi.org/10.4236/pp.2017.89023**

Falowo AB, Mukumbo FE, Muchenje V. 2019. Phytochemical constituents and antioxidant activity of *Artemisia afra* and *Bidens pilosa* essential oil in ground pork. **J Essent Oil Bear Plants** 22: 176 - 186. **https://doi.org/10.1080/0972060x.2019.1574212**

Fernandes FC, Sales GWP, Nogueira NAP. 2016. Atividade antifúngica e possível mecanismo de ação do óleo essencial de folhas de *Ocimum gratissimum* (Linn.) sobre espécies de *Candida.* **Rev Bras Plantas Med** 18: 511 - 523. **https://doi.org/10.1590/1983-084x/15_222**

Fernandes MJB, Barros AV, Melo MS, Simoni IC. 2012. Screening of Brazilian plants for antiviral activity against animal herpesviruses. **J Med Plants Res** 6: 2261 - 2265. **https://doi.org/10.5897/jmpr10.040**

Ferreira MC. 2014. Medicinal knowledge and plant utilization in an Amazonian coastal community of Marudá, Pará State (Brazil). **J Ethnopharmacol** 24: 171 - 184.

Ferreira PG, Ferraz AC, Figueiredo JG, Lima CF, Rodrigues VG, Taranto AG, Ferreira JMS, Brandão GC, Vieira-Filho SA, Duarte LP, Magalhães CLB, Magalhaes JC. 2018. Detection of the antiviral activity of epicatechin isolated from *Salacia crassifolia* (Celastraceae) against *Mayaro* virus based on protein C homology modelling and virtual screening. **Arch Virol** 163:1567 - 1576. **https://doi.org/10.1007/s00705-018-3774-1**

REFLORA. 2020. **Lista de espécies da flora do Brasil. http://floradobrasil.jbrj.gov.br**

Fontes-Júnior EA, Souza PJC, Nascimento JLM, Santos SN, Espíndola LS, Ferreira VMM. 2009. Antinociceptive and antiinflammatory properties of the ethanolic extract of *Pouteria ramiflora* roots. **Lat Am J Pharm** 28: 812 - 818.

Folasade OA, Olaide RA, Olufemi TA. 2016. Antioxidant properties of *Persea americana* M. seed as affected by different extraction solvent. **J Adv Food Sci Technol** 3: 101 - 106.

Furtado FF, Menezes CP, Bernardo VB, Santana AE, Goulart Salvador MJ, Araújo-Júnior JX, Paulino ET, Silva JCG, Ribeiro ÊAN, Medeiros IA. 2017. Antihypertensive and vasorelaxant effects of the ethanolic extract from the stem bark of *Aspidosperma tomentosum* Mart. **J Appl Pharm Sci** 7: 118 - 124. **https://doi.org/10.7324/japs.2017.71017**

Galdino PM, Carvalho AAV, Florentino IF, Martins JLR, Gazola AC, De Paula JR, De Paula JAM, Torres LMB, Costa EA, Lima TCM. 2015. Involvement of monoaminergic systems in the antidepressant-like properties of *Lafoensia pacari* A. St. Hil. **J Ethnopharmacol** 170: 218 - 225. **https://doi.org/10.1016/j.jep.2015.05.015**

Galdino PM, Nascimento MVM, Sampaio BL, Ferreira RN, Paula JR, Costa EA. 2009. Antidepressant-like effect of *Lafoensia pacari* A. St.-Hil. ethanolic extract and fractions in mice. **J Ethnopharmacol** 124: 581 - 585. **https://doi.org/10.1016/j.jep.2009.05.001**

Garavito G, Rincón J, Arteaga L, Hata Y, Bourdy G, Gimenez A, Pinzón R, Deharo E. 2006. Antimalarial activity of some Colombian medicinal plants. **J Ethnopharmacol** 107: 460 - 462. **https://doi.org/10.1016/j.jep.2006.03.033**

Garro MF, Ibáñez AGS, Vega AE, Sosa ACA, Pelzer L, Saad JR, Maria AO. 2015. Gastroprotective effects and antimicrobial activity of *Lithraea molleoides* and isolated compounds against *Helicobacter pylori*. **J Ethnopharmacol** 176: 469 - 474. **https://doi.org/10.1016/j.jep.2015.11.009**

Gasparotto FM, Lívero FAR, Palozi RAC, Ames ML, Nunes B, Donadel G, Ribeiro RCL, Lourenço ELB, Kassuva CAL, Gaspatorro-Júnior A. 2018. Heart-protective effects of *Echinodorus grandiflorus* in rabbits that are fed a high-cholesterol diet. **Planta Med** 84: 1271 - 1279. **https://doi.org/10.1055/a-0644-2794**

Gauri M, Ali SJ, Khan MS. 2015. A review of *Apium graveolens* (Karafs) with special reference to Unani medicine. **Int Arch Integr Med** 2: 131 - 136.

Ghosh S, Shankar S, Srivastava S, Kumar A, Kumar S, Ray DD, Rawat AKS. 2013. Veterinary parasitology acaricidal properties of *Ricinus communis* leaf extracts against organophosphate and pyrethroids resistant *Rhipicephalus (Boophilus) microplus*. **Vet Parasitol** 192: 259 - 267. **https://doi.org/10.1016/j.vetpar.2012.09.031**

Gochev V, Dobreva A, Girova T, Stoyanova A. 2010. Antimicrobial activity of essential oil from *Rosa alba*. **Biotechnol Biotec Equipm** 24: 512 - 515. **https://doi.org/10.1080/13102818.2010.10817892**

Gombeau K, Oliveira RB, Sarrazin SLF, Mourão RHV, Bourdineaud JP. 2019. Protective effects of *Plathymenia reticulate* and *Connarus favosus* aqueous extracts against Cadmium- and Mercury-induced toxicities. **Toxicol Res** 35: 25 - 35. **https://doi.org/10.5487/tr.2019.35.1.025**

Gomes PB, Noronha EC, Melo CTV, Bezerra JNS, Neto MA, Lino CS, Vasconcelos SMM, Viana GSB, Sousa FCF. 2008. Central effects of isolated fractions from the root of *Petiveria alliacea* L. (tipi) in mice. **J Ethnopharmacol** 120: 209 - 214. **https://doi.org/10.1016/j.jep.2008.08.012**

Gomes SP, Favero S. 2011. Evaluation of essential oils with insecticidal activity in *Triatoma infestans* (Klug, 1834) (Hemiptera: Reduviidae). **Acta Scientiarum** 33: 147 - 151. **https://doi.org/10.4025/actascihealthsci.v33i2.9531**

Goulart YCF, Martins JVC, Santos AR, Moreira LY, Calixto JB, Cortez DAG, Audi EA. 2007. Involvement of serotonin in the antidepressant-like effect of extract from *Kielmeyera coriacea* stems. **Pharm Biol** 45: 169 - 175. **https://doi.org/10.1080/13880200701212981**

Goulart YCF, Sela VR, Obici S, Martins JVC, Otobone F, Cortez DA, Audi EA. 2005. Evaluation of gastric anti-ulcer activity in a hydro-ethanolic extract from *Kielmeyera coriacea*. **Braz Arch Biol Technol** 48: 211 - 216. **https://doi.org/10.1590/s1516-89132005000200007**

Govindarajan M, Sivakumar R, Rajeswary M, Yogalakshmi, K. 2013. Chemical composition and larvicidal activity of essential oil from *Ocimum basilicum* (L.) against *Culex tritaeniorhynchus*, *Aedes albopictus* and *Anopheles subpictus* (Diptera: Culicidae). **Exp Parasitol** 134: 7 - 11. **https://doi.org/10.1016/j.exppara.2013.01.018**

Grube K, Spiegler V, Hensel A. 2019. Antiadhesive phthalides from *Apium graveolens* fruits against uropathogenic *E. coli*. **J Ethnopharmacol** 237: 300 - 306. **https://doi.org/10.1016/j.jep.2019.03.024**

Guarim Neto G, Maciel MRA. 2008. **O saber local e os recursos vegetais em Juruena Mato Grosso**. Entrelinhas, Mato Grosso, Brasil.

Guarim Neto G, Pasa MC. 2009. Estudo Etnobotânico em uma área de Cerrado no município de Acorizal, Mato Grosso. **Flovet** 1: 5 - 13.

Guleria S, Kumar A. 2009. Antifungal activity of *Agave americana* leaf extract against *Alternaria brassicae*, causal agent of *Alternaria* blight of Indian mustard (*Brassica juncea*). **Arch Phytopathol Plant Protect** 42: 370 - 375. **https://doi.org/10.1080/03235400601121380**

Gûrbüz I, Akyüz Ç, Yesilada E, Sener B. 2000. Anti-ulcerogenic effect of *Momordica charantia* L. fruits on various ulcer models in rats. **J Ethnopharmacol** 71: 77 - 82. **https://doi.org/10.1016/s0378-8741(99)00178-6**

Hassan SM, Sultana B, Iqbal M, Naz S, Abbas M. 2017. Biocatalysis and Agricultural Biotechnology Anti-

aflatoxigenic activity of *Punica granatum* and *Ziziphus jujuba* leaves against *Aspergillus parasiticus* inoculated poultry feed: Effect of storage conditions. **Biocatal Agric Biotechnol** 10: 104 - 112. **https://doi.org/10.1016/j.bcab.2017.02.003**

Heinrich M, Ankli A, Frei B, Weimann C, Sticher O. 1998. Medicinal plants in Mexico: Healers consensus and cultural importance. **Social Sci Med** 47: 1859 - 1871. **https://doi.org/10.1016/s0277-9536(98)00181-6**

Henriques BO, Côrrea O, Azevedo EPC, Pádua RM, Oliveira VLS, Oliveira THC, BOff D, Dias ACF, Souza DG, Amaral FA, Teixeira MM, Castilho D?O, Braga FC. 2016. *In vitro* TNF-α inhibitory activity of Brazilian plants and anti-Inflammatory effect of *Stryphnodendron adstringens* in an acute arthritis model. **Evid Based Complement Altern Med** 1: 1 - 15. **https://doi.org/10.1155/2016/9872598**

Hernández JF, Urueña CP, Sandoval TA, Cifuentes MC, Formentini L, Cuezva JM, Fiorentino S. 2017. A cytotoxic *Petiveria alliacea* dry extract induces ATP depletion and decreases β-F1-ATPase expression in breast cancer cells and promotes survival in tumor-bearing mice. **Braz J Pharm** 27: 306 - 314. **https://doi.org/10.1016/j.bjp.2016.09.008**

Hossain MDS, Uddin MDS, Moniruzzaman MD, Asaduzzaman MD. 2015. Comparative study of cytotoxic potential and phytochemical screening of *Xanthosoma sagittifolium* rhizome and *Syngonium podophylam*. **J Med Plants Stud** 3: 43 - 46.

Hosseinzadeh H, Younesi HM. 2002. Antinociceptive and anti-inflammatory effects of *Crocus sativus* L. stigma and petal extracts in mice. **BMC Pharmacol** 2: 1 - 8.

Hozayen WG, El-Desouky MA, Soliman HA, Ahmed RR, Khaliefa AK. 2016. Antiosteoporotic effect of *Petroselinum crispum*, *Ocimum basilicum* and *Cichorium intybus* L. in glucocorticoid-induced osteoporosis in rats. **BMC Complem Altern Med** 16: 1 - 11. **https://doi.org/10.1186/s12906-016-1140-y**

Hussein G, Miyashiro H, Nakamura N, Hattori M, Kakiuchi N, Shimotohno K. 2000. Inhibitory effects of sudanese medicinal plant extracts on hepatitis c virus (HCV) protease. **Phytother Res** 14: 510 - 516. **https://doi.org/10.1002/1099-1573(200011)14:7<510::aid-ptr646>3.0.co;2-b**

Ibrahim MA, Mohammed A, Isah MB, Aliyu AB. 2014. Anti-trypanosomal activity of African medicinal plants: A review update. **J Ethnopharmacol** 154: 26 - 54. **https://doi.org/10.1016/j.jep.2014.04.012**

ICD-10, 2016. **http://apps.who.int/classifications/icd10/browse/2016/en**

Instituto Brasileiro de Geografia e Estatística. 2018. **Censo Populacional**. **http://www.ibge.gov.br/cidadesat/topwindow.htm?1**

Ilavarasan R, Mallika M, Venkataraman S. 2006. Anti-inflammatory and free radical scavenging activity of *Ricinus communis* root extract. **J Ethnopharmacol** 103: 478 - 480. **https://doi.org/10.1016/j.jep.2005.07.029**

Islam M, Hussain K, Latif A, Hashmi FK, Saeed H, Bukhari NI, Hassan SS, Danish MZ, Ahmad B. 2015. Evaluation of extracts of seeds of *Syzygium cumini* L. for hepatoprotective activity using CCl_4-Induced stressed rats. **Pak Vet J** 35: 197 - 200.

Ivanova A, Mikhova B, Najdenski H, Tsvetkova I, Kostova I. 2005. Antimicrobial and cytotoxic activity of *Ruta graveolens*. **Fitoterapia** 76: 344 - 347. **https://doi.org/10.1016/j.fitote.2005.02.008**

Iwamoto K, Fukuda Y, Tokikura C, Noda M, Ymamoto M, Ymashita M, Zaima N, Lida A, Moriyama T. 2016. The anti-obsesity efffect of Taheebo (*Tabebuia avellanedae* Lorentz ex Griseb) extract in ovariectomized mice and the identification of a potential anti-obesity compound. **Biochem Biophys Res Commun** 478: 1136 - 1140. **https://doi.org/10.1016/j.bbrc.2016.08.081**

Jager AK, Hutchings A, Staden JV. 1996. Screening of Zulu medicinal plants for prostaglandin-synthesis innibitors. **J Ethnopharmacol** 52: 95 - 100. **https://doi.org/10.1016/0378-8741(96)01395-5**

Jamuna S, Sadullah SMS, Ashokkumar R, Shanmuganathan G, Mozhi SS, Devaraj NS. 2017. Potential antioxidant and cytoprotective effects of essential oil extracted from *Cymbopogon citratus* on OxLDL and H_2O_2 LDL induced Human Peripheral Blood Mononuclear Cells (PBMC). **Food Sci Hum Wellness** 6: 60 - 69. **https://doi.org/10.1016/j.fshw.2017.02.001**

Jerke G, Horianski MA, Bargarbi S, Salvatierra KA, Kramer FL, Jordá GB, Amer LS, Guida AM. 2008. Actividad antifúngica de extractos de *Myrocarpus frondosus* Fr. Allem sobre hongos aislados de yerba mate y té comerciales. **Rev Cienc Tecnol** 10: 24 - 29.

Jiménez-Arellanes A, Luna-Herrera J, Ruiz-Nicolás R, Cornejo-Garrido J, Tapia A, Yépez-Mulia L. 2013. Antiprotozoal and antimycobacterial activities of *Persea americana* seeds. **BMC Complem Altern Med** 13: 1 - 5. **https://doi.org/10.1186/1472-6882-13-109**

Jorge A, Leitão MM, Bernal LPT, Santos E, Kuraoka-Oliveira AM, Justi P, Argandoña E, Kassuya CAL. 2020. Analgesic and anti-inflammatory effects of *Caryocar brasiliense*. **Antiinflamm Antiallergy Agents Med Chem** 19: 1 - 10. **https://doi.org/10.2174/1871523018666190408144320**

Jovtchev G, Stankov A, Georgieva A, Dobreba A, Bakalova R, Aoki I, Mileva M. 2018. Cytotoxic and genotoxic potential of Bulgarian *Rosa alba* L. essential oil – *in vitro* model study. **Biotechnol Biotec Equipm** 32: 513 - 519. **https://doi.org/10.1080/13102818.2017.1423245**

Kataki MS, Kakoti BB, Bhuyan B, Rajkumari A, Rajak P. 2014. Garden rue inhibits the arachidonic acid pathway, scavenges free radicals, and elevates FRAP: role in inflammation. **Chin J Nat Med** 12: 172 - 179. **https://doi.org/10.1016/s1875-5364(14)60029-7**

Kaur J, Rathinam X, Kasi M, Leng KM, Ayyalu R, Kathiresan S, Subramaniam S. 2010. Preliminary investigation on the antibacterial activity of mango (*Mangifera indica* L: Anacardiaceae) seed kernel. **Asian Pac J Trop Med** 3: 707 - 710. **https://doi.org/10.1016/s1995-7645(10)60170-8**

Kedia A, Prakash B, Kumar P, Chanotiya CS, Kishore N. 2014. Antifungal, antiaflatoxigenic, and insecticidal efficacy of spearmint (*Mentha spicata* L.) essential oil. **Int Biodeterior Biodegradation** 89: 29 - 36. **https://doi.org/10.1016/j.ibiod.2013.10.027**

Khan A, Gilani AH. 2009. Antispasmodic and bronchodilator activities of *Artemisia vulgaris* are mediated through dual blockade of muscarinic receptors and calcium influx. **J Ethnopharmacol** 126: 480 - 486. **https://doi.org/10.1016/j.jep.2009.09.010**

Kohn MLK, Pizão PE, Foglio MA, Antônio MA, Amaral MCE, Bittric V, Carvalho JE. 2006. Antiproliferative activity of crude extract and fractions obtained from *Aspidosperma tomentosum*. **Rev Bras Plant Med** 8: 110 - 115.

Koo H, Gomides BP, Rosalen PL, Ambrosano GM, Park YK, Cury JA. 2000. *In vitro* antimicrobial activity of propolis and *Arnica montana* against oral pathogens. **Arch Oral Biol** 45: 141 - 148. **https://doi.org/10.1016/s0003-9969(99)00117-x**

Koolen HHF, Silva FMA, Gozzo FC, Souza AQL, Souza ADL. 2013. Antioxidant, antimicrobial activities and characterization of phenolic compounds from buriti (*Mauritia flexuosa* L.f.) by UPLC–ESI-MS/MS. **Food Res Int** 51: 467 - 473. **https://doi.org/10.1016/j.foodres.2013.01.039**

Kristanti CD, Simanjuntak FPJ, Dewi NKPA, Tianri SV, Hendra P. 2017. Anti-inflammatory and analgesic activities of avocado seed. **J Farm Sains dan Komunitas** 14: 104 - 111.

Kubatka P, Kello M, Kajo K, Kruzliak P, Mojzis J, Vybohova D, Adamkov M, Jasek K, Lasabova Z, Zulor P, Fialova S. Dokupilova S, Solar P, Pec M, Adamicova K, Danko J, Adamek M, Busselberg D. 2017. Antineoplastic effects of clove buds (*Syzygium aromaticum* L.) in the model of breast carcinoma. **J Cell Mol Med** 21: 2837 - 2851. **https://doi.org/10.1111/jcmm.13197**

Kumar A, Ilavarasan R, Jayachandran T, Deecaraman M, Kumar RM, Aravindan P, Padmanabhan N, Krishan MRV. 2008. Anti-inflammatory activity of *Syzygium cumini* seed. **Afr J Biotechnol** 7: 941 - 943.

Labsi M, Khelifi L, Mezioug D, Soufli I, Touil-Boukoffa C. 2016. Antihydatic and immunomodulatory effects of *Punica granatum* peel aqueous extract in a murine model of echinococcosis. **Asian Pac J Trop Med** 9: 211 - 220. **https://doi.org/10.1016/j.apjtm.2016.01.038**

Lagha R, Bem-Abdalla F, Al-Sarhan BO, Al-Sodany Y. 2019. Antibacterial and biofilm inhibitory activity of medicinal plant essencial oils against *Escherrichia coli* isolated from UTI patients. **Molecules** 24: 1 - 12. **https://doi.org/10.3390/molecules24061161**

Lago GHG, Carvalho LAC, Da Silva FS, Toyama DO, Fávero AO, Romoff P. 2010. Chemical composition and anti-inflammatory evaluation of essential oils from leaves and stem barks from *Drimys brasiliensis* Miers (Winteraceae). **J Brazil Chem Soc** 21: 1760 - 1765. **https://doi.org/10.1590/s0103-50532010000900024**

Lang G, Buchbauer G. 2012. A review on recent research results (2008–2010) on essential oils as antimicrobials and antifungals. A review**. Flavour Frag J** 27: 13 - 39. **https://doi.org/10.1002/ffj.2082**

Leme DEM, Rodrigues AB, Almeida-Apolonio AA, Dantas FGDS, Negri MFN, Svidzinski TIE, Mota JDS, Cardoso CAL, Oliveira KMP. 2017. In vitro control of uropathogenic microorganisms with the ethanolic from the leaves of *Cochlospermum regium* (Schrank) Pilger. **Evid Based Complement Alternat Med** 1 - 8. **https://doi.org/10.1155/2017/4687154**

Lescano CH, Oliveira IP, Zamineli T, Baldivia DD, Silva LR, Napolitano M, Silvério CB, Lincopan N, Sanjinez-Argandona EJ. 2016. *Campomanesia adamantium* peel extract in antidiarrheal activity: the ability of

inhibition of heat-stable enterotoxin by polyphenols. **Plos One** 11: 1 - 10. **https://doi.org/10.1371/journal.pone.0165208**

Lessa MA, Araújo CV, Kaplan MA, Pimenta D, Figueiredo MR, Tibiriçá E. 2008. Antihypertensive effects of crude extracts from leaves of *Echinodorus grandiflorus*. **Fundam Clin Pharmacol** 22: 161 - 168. **https://doi.org/10.1111/j.1472-8206.2008.00565.x**

Lima CB, Migotto DL, Oliveira GR, Souza TC, Santana RO, Castejon FV, Tanure CBGS, Santana AP, Stringhini JH, Racanicci AMC. 2016. Dietary supplementation of barbatimão (*Stryphnodendron adstringens*) and pacari (*Lafoensia Pacari*) extracts on the oxidative stability and quality of chicken meat. **Braz J Poult Sci** 18: 669 - 676. **https://doi.org/10.1590/1806-9061-2015-0212**

Lima CR, Vasconcelos CFB, Costa-Silva JH, Maranhão CA, Costa J, Batista TM, Carneiro EM, Soares LAL, Ferreira F, Wanderley AG. 2012. Anti-diabetic activity of extract from *Persea americana* Mill. leaf via the activation of protein kinase B (PKB/Akt) in streptozotocin-induced diabetic rats. **J Ethnopharmacol** 141: 517 - 525. **https://doi.org/10.1016/j.jep.2012.03.026**

Lima MRF, Luna JS, Santos AF, andrade MCC, Sant'ana AEG, Genet JP, Marquez B, Neuville L, Moreau N. 2006. Anti-bacterial activity of some Brazilian medicinal plants. **J Ethnopharmacol** 105: 137 - 147. **https://doi.org/10.1016/j.jep.2005.10.026**

Lima RF, Alves EP, Rosalen PL, Ruiz ALTG, Duarte MCT, Góes VFE, Medeiros ACD, Pereira JV, Godoy GP, Costa EMB. 2014. Antimicrobial and antiproliferative potencial of *Annadenanthera colubrina* (Vell.) Brenan. **Evid Based Complement Altern Med** 2014: 1 - 7. **https://doi.org/10.1155/2014/802696**

Lima-Saraiva SRG, Guimarães AL, Oliveria AP, Saraiva, HCC, Oliveria-Júnior RG, Barros VRP, Menezes VG, Oliveira RA, Silva FS, Lima RS, Matos MHT, Amorim ELC, Almeida JRGS. 2012. Antioxidant activity and acute toxicity of *Neoglaziovia variegata* (Bromeliaceae). **Afr J Biotechnol** 11: 13998 - 14006.

Linde GA, Gazim ZC, Cardoso BK, Jorge LF, Tešević V, Glamoćlija J, Soković M, Colauto NB. 2016. Antifungal and antibacterial activities of *Petroselinum crispum* essential oil. **Genet Mol Res** 15: 1 - 11. **https://doi.org/10.4238/gmr.15038538**

Lopez CP, Sumalapao DEP, Villarante NR. 2017. Hepatoprotective activity of aqueous and ethanolic *Bixa orellana* L. leaf extracts against carbon tetrachloride-induced hepatotoxicity Natl. **J Physiol Pharm Pharmacol** 7: 1 - 5. **https://doi.org/10.5455/njppp.2017.7.0412011052017**

Lorenzi H, Matos FJA. 2008. **Plantas medicinais no Brasil: nativas e exóticas.** Plantarum, Nova Odessa, Brasil.

Lu Y, Demleitner F, Song L, Rychlik M, Huang D. 2016. Oligomeric proanthocyanidins are the active compounds in *Abelmoschus esculentus* Moench for its α-glucosidase inhibition activity. **J Func Foods** 20: 463 - 471. **https://doi.org/10.1016/j.jff.2015.10.037**

Luiz-Ferreira A, Cola-Miranda M, Barbastefano V, Hiruma-Lima CA, Vilegas W, Brito ARMS. 2008. Should *Anacardium humile* St. Hil be used as an antiulcer agent? A scientific approach to the traditional knowledge. **Fitoterapia** 79: 207 - 209. **https://doi.org/10.1016/j.fitote.2007.11.006**

Macêdo-Costa MR, Sette-De-Souza PH, Carneiro SERC, Fernandes JM, LAngassner SMZ, Pereira MSV, Lima KC. 2017. *Solanum paniculatum* Linn: A potential antimicrobial agent against oral microorganisms. **Afr J Microbiol Res** 11: 1688 - 1692.

Machado FDF, Silva FV, Fernandes HB, Freitas FFBP, Arcanjo DDR, Lima JT, Almeida JRGS, Oliveira FA, Oliveira RCM. 2013. Gastroprotective effect of an ethanolic extract from *Neoglaziovia variegata* (Arruda) Mez (Bromeliaceae) in rats and mice. **Zeitschrift für Naturforschung C** 68: 97 - 107. **https://doi.org/10.1515/znc-2013-3-404**

Machado M, Dinis AM, Salgueiro L, Custódio JBA, Cavaleiro C, Sousa MC. 2011. Anti-Giardia activity of *Syzygium aromaticum* essential oil and eugenol: Effects on growth, viability, adherence and ultrastructure. **Exp Parasitol** 127: 732 - 739. **https://doi.org/10.1016/j.exppara.2011.01.011**

Madeira JC, Silva GVL, Batista JJ, Saraiva GD, Santos GRC, Assreuy AM, Mourão PAS, Pereira MG. 2018. An arabinogalactan-glycoconjugate from *Genipa Americana* leaves present anticoagulant, antiplatelet and antithrombotic effects. **Carbohyd Polym** 202: 554 - 562. **https://doi.org/10.1016/j.carbpol.2018.09.003**

Mahdi-Pour B, Jothy SL, Latha LY, Chen Y, Sasidharan S. 2012. Antioxidant activity of methanol extracts of different parts of *Lantana camara*. **Asian Pac J Trop Biomed** 2: 960 - 965. **https://doi.org/10.1016/s2221-1691(13)60007-6**

Mahmoud MF, El Ashry FEZZ, El Maraghy NN, Fahmy A. 2017. Studies on the antidiabetic activities of

Momordica charantia fruit juice in streptozotocin-induced diabetic rats. **Pharm Biol** 55: 758 - 765. **https://doi.org/10.1080/13880209.2016.1275026**

Maia CN, Silva CM, Júnior RR, Oliveira DA, Perácio RB, Godinho CS, Fernandes EG, Valério HM. 2016. Antimicrobial activities and preliminary phytochemical tests of crude extracts of important ethnopharmacological plants from Brazilian Cerrado. **J Med Plants Res** 10: 612 - 620. **https://doi.org/10.5897/jmpr2016.6192**

Makare N, Bodhankar S, Rangari V. 2001. Immunomodulatory activity of alcoholic extract of *Mangifera indica* L. in mice. **J Ethnopharmacol** 78: 133 - 137. **https://doi.org/10.1016/s0378-8741(01)00326-9**

Malheiros A, Cechinel-Filho V, Schmitt CB, Yunes RA, Escalante A, Svetaz L, Zacchino S, Monache FD. 2005. Antifungal activity of drimane sesquiterpenes from *Drimys brasiliensis* using bioassay guided fractionation. **J Pharm Pharm Sci** 8: 335 - 339.

Malik ZA, Singh M, Sharma PL. 2011. Neuroprotective effect of *Momordica charantia* in global cerebral ischemia and reperfusion induced neuronal damage in diabetic mice. **J Ethnopharmacol** 133: 729 - 734. **https://doi.org/10.1016/j.jep.2010.10.061**

Maquiaveli CC, Silva ER, Rosa LC, Francescato HDC, Lucon Júnior JF, Silva CGA, Casarini DE, Ronchi FA, Coimbra TM. 2014. *Cecropia pachystachya* extract attenuated the renal lesion in 5/6 nephrectomized rats by reducing in fl ammation and renal arginase activity. **J Ethnopharmacol** 158: 49 - 57. **https://doi.org/10.1016/j.jep.2014.09.042**

Marbun R, Suwarso E, Yuandani Y. 2018. Immunomodulatory effects of ethanol extract of *Artemisia vulgaris* L. in male rats. **Asian J Pharm Clin Res** 11: 245 - 247. **https://doi.org/10.22159/ajpcr.2018.v11s1.26619**

Marchese A, Orhan IE, Daglia M, Barbieri R, Lorenzo AD, Nabavi SF, Gortzi O, Izadi M, Nabavi SM. 2016. Antibacterial and antifungal activities of thymol: A brief review of the literature. **Food Chem** 210: 402 - 414. **https://doi.org/10.1016/j.foodchem.2016.04.111**

Marchioro M, Blank MFA, Mourão RHV, Antoniolli AR. 2005. Anti-nociceptive activity of the aqueous extract of *Erythrina velutina* leaves. **Fitoterapia** 76: 637 - 642. **https://doi.org/10.1016/j.fitote.2005.07.002**

Marinho DG, Alviano DS, Matheus ME, Alviano CS, Fernandes PD. 2011. The látex obtained form *Hancornia speciosa* Gomes possesses anti-inflammatory activity. **J Etnhopharmacol** 135: 530 - 537. **https://doi.org/10.1016/j.jep.2011.03.059**

Martins JL, Rodrigues OR, Souza FB, Fajemiroye JO, Galdino PM, Florentino IF, Costa EA. 2015a. Medicinal species with gastroprotective activity found in the Brazilian Cerrado. **Fund Clin Pharmacol** 29: 238 - 251. **https://doi.org/10.1111/fcp.12113**

Martins CM, Morais S, Nascimento EA, Oliveira A. 2015b. Chemical constituents and evaluation of antimicrobial and cytotoxic activities of *Kielmeyera coriacea* Mart., Zucc. essential oils. **Evid-Based Compl Alt** 1 - 9.

Mendes EPP. 2005. **A produção rural familiar em Goiás: as comunidades rurais no município de Catalão.** Thesis, Universidade Estadual Paulista, Presidente Prudente, Brasil.

Mesquita ML, Grellier P, Mambu L, De Paula JE, Espindola LS. 2007. *In vitro* antiplasmodial activity of Brazilian Cerrado plants used as traditional remedies. **J Ethnopharmacol** 110: 165 - 177. **https://doi.org/10.1016/j.jep.2006.09.015**

Mileva MM, Kusovski VK, Krastev DS, Dobreva AM, Galabov, AS. 2014. Chemical composition, in vitro antiradical and antimicrobial activities of Bulgarian *Rosa alba* L. essential oil against some oral pathogens. **Int J Curr Microbiol App Sci** 3: 11 - 20.

Miranda MA, Kuehn CC, Cardoso JFR, Oliveira LGR, Magalhães LG, Tiossi RFJ, Rodrigues V, Zucolloto S, Prado Júnior JC, Mcchesney JD, Bastos JK. 2013. Immunomodulatory effect of the alkaloidic extract of *Solanum lycocarpum* fruits in mice infected with *Schistosoma mansoni*. **Exp Parasitol** 133: 396 - 402. **https://doi.org/10.1016/j.exppara.2012.12.012**

Mishra N, Kumar D, Rizvi SI. 2016. Protective effect of *Abelmoschus esculentus* against alloxan-induced Diabetes in wistar strain rats. **J Diet Suppl** 13: 634 - 646. **https://doi.org/10.3109/19390211.2016.1164787**

Misra AK, Varma SK, Kumar R. 2018. Antiinflammatory effect of an extract of *Agave americana* on experimental animals. **Pharmacogn Res** 10: 104 - 108.

Mitropoulou G, Fitsiou E, Spyridopoulou K, Tiptiri-Kourpeti A, Bardouki H, Vamvakias M, Panas P, Chlichlia K, Pappa A, Kourkoutas Y. 2017. *Citrus medica* essential oil exhibits significant antimicrobial and antiproliferative activity. **LWT - Food Sci Technol** 84: 344 - 352.

https://doi.org/10.1016/j.lwt.2017.05.036

Moazedi AA, Mirzaie DN, Seyyednejad SM, Zadkarami MRZ, Amirzargar AA. 2007. Spasmolytic effect of *Petroselinum crispum* (Parsley) on rat's Ileum at different calcium chloride concentrations. **Pak J Biol Sci** 10: 4036 - 4042. **https://doi.org/10.3923/pjbs.2007.4036.4042**

Mohamed MIE, Abdelgaleil SAM. 2008. Chemical composition and insecticidal potential of essential oils from Egyptian plants against *Sitophilus oryzae* (L.) (Coleoptera: Curculionidae) and *Tribolium castaneum* (Herbst) (Coleoptera: Tenebrionidae). **Appl Entomol Zool** 43: 599 - 607. **https://doi.org/10.1303/aez.2008.599**

Mohan CG, Deepak M, Viswanatha GL, Savinay G, Hanumantharaju V, Rajendra CE, Halemani PD. 2013. Antioxidant and anti-inflammatory activity of leaf extracts and fractions of *Mangifera indica*. **Asian Pac J Trop Med** 6: 311 - 314. **https://doi.org/10.1016/s1995-7645(13)60062-0**

Mojtaba R, Eatemeh GB, Mohammad H, Bektas T, Zahra M, Masoud AM, Ali NSM. 2019. Chemical composition and antibacterial and antioxidant properties of essential oils of *Zataria multiflora*, *Artemisia deracunculus* and *Mentha piperita*. **Med Lab J** 13: 1 - 7.

Mollick MR, Bhowmick B, Mondal D, Maity D, Rana D, Dash SK, Chattopashyay S, Roy S, Sarkar J, Acharya K, Chakraborty M, Chattopashyay D. 2014. Anticancer (*in vitro*) and antimicrobial effect of gold nanoparticles synthesized using *Abelmoschus esculentus* (L.) pulp extract via a green route. **RSC Adv** 71: 37838 - 37848. **https://doi.org/10.1039/c4ra07285e**

Moraes TM, Rodrigues CM, Kushima H, Bauab TM, VillegaS W, Pellizzon CH Brito ARM. 2008. *Hancornia speciosa*: Indications of gastroprotective, healing and anti-*Helicobacter pylori* actions. **J Ethnopharmacol** 120: 161 - 168. **https://doi.org/10.1016/j.jep.2008.08.001**

Moreira MR, Ponce AG, Del Valle CE, Roura SI, 2005. Inhibitory parameters of essential oils to reduce a foodborne pathogen. **LWT - Food Sci Technol** 38: 565 - 570. **https://doi.org/10.1016/j.lwt.2004.07.012**

Moreno EKG, Thomaz DV, Machado FB, Leite LCS, Rodrigues ESB, Fernandes MA, Carvalho MF, Oliveira MT, Caetano MP, Peixoto CEC, Isecke BG, Gil ES, Macedo IYL. 2019. Antioxidant study and electroanalytical investigation of selected herbal samples used in folk medicine. **Int J Electrochem Sci** 14: 838 - 847. **https://doi.org/10.20964/2019.01.82**

Mors WB, Rizzini CT, Pereira NA. 2000. **Medicinal plants of Brazil.** Reference Publications Inc. lgonac, Michigan, USA.

Mostafa AA, Al-Askar AA, Almaary KS, Dawoud TM, Sholkamy EN, Bakri MM. 2018. Antimicrobial activity of some plant extracts against bacterial strains causing food poisoning diseases. **Saudi J Biol Sci** 25: 361 - 366. **https://doi.org/10.1016/j.sjbs.2017.02.004**

Munari CC, Oliveira PF, Lima IMS, Martins SPL, Costa JC, Bastos JK, Tavares DC. 2012. Evaluation of cytotoxic, genotoxic and antigenotoxic potential of *Solanum lycocarpum* fruits glicoalkaloid extract in V79 cells. **Food Chem Toxicol** 50: 3696 - 3701. **https://doi.org/10.1016/j.fct.2012.07.028**

Nahak G, Sahu RK. 2014. Immunomodulatory activity of aqueous leaf extract of *Ocimum basilicum* Linn in clarias batrachus. **Int J Pharm Sci** 6: 433 - 440.

Nascimento MVM, Galdino PM, Florentino IF, Sampaio BL, Vanderlinde FA, De Paula JR, Costa EA. 2011. Antinociceptive effect of *Lafoensia pacari* A. St.-Hil. independent of anti-inflammatory activity of ellagic acid. **J Nat Med** 65: 448 - 454. **https://doi.org/10.1007/s11418-011-0517-y**

Naz R, Bano A. 2013. Phytochemical screening, antioxidants and antimicrobial potential of *Lantana camara* in different solvents. **Asian Pac J Trop Dis** 3: 480 - 486. **https://doi.org/10.1016/s2222-1808(13)60104-8**

Nazato VS, Rubem-Mauro L, Vieira NAG, Rocha-Junior DS, Silva MG, Lopes PS, Dal-Belo CA, Cogo JC, Santos MG, Cruz-Höfling MA, Oshima-Franco Y. 2010. *In vitro* antiophidian properties of *Dipteryx alata* Vogel. **Molecules** 15: 5956 - 5970. **https://doi.org/10.3390/molecules15095956**

Neeraja K, Dbnath R, Firdous SM. 2015. Cardioprotective activity of fruits of *Sechium edule*. **Bangladesh J Pharmacol** 10: 125 - 130. **https://doi.org/10.3329/bjp.v10i1.21329**

Nery PS, Nogueira FA, Martins FR, Duarte FR. 2010. Effects of *Anacardium humile* leaf extracts on the development of gastrointestinal nematode larvae of sheep. **Vet Parasitol** 171: 361 - 364. **https://doi.org/10.1016/j.vetpar.2010.03.043**

Nishanthini A, Mohan VR. 2012. Antioxidant activities of *Xanthosoma sagittifolium* Schott using various *in vitro* assay models. **Asian Pac J Trop Biomed** 2: S1701 - S1706.

https://doi.org/10.1016/s2221-1691(12)60481-x

Noorbala AA, Akhondzadeh S, Tahmacebi-Pour N, Jamshidi AH. 2005. Hydro-alcoholic extract of *Crocus sativus* L. versus fluoxetine in the treatment of mild to moderate depression: a double-blind, randomized pilot trial. **J Ethnopharmacol** 97: 281 - 284. **https://doi.org/10.1016/j.jep.2004.11.004**

Nouri F, Nourollahi-Fard SR, Foroodi HR, Sharifi H, 2016. *In vitro* anthelmintic effect of Tobacco (*Nicotiana tabacum*) extract on parasitic nematode, *Marshallagia marshalli*. **J Parasit Dis** 40: 643 - 647. **https://doi.org/10.1007/s12639-014-0550-3**

Ntonga PA, Baldovini N, Mouray E, Mambu L, Belong P, Grellier P. 2014. Activity of *Ocimum basilicum*, *Ocimum canum* and *Cymbopogon citratus* essential oils against *Plasmodium falciparum* and mature-stage larvae of *Anopheles funestus* s.s. **Parasite** 21: 1 - 7. **https://doi.org/10.1051/parasite/2014033**

Odeja OO, Obi G, Ogwuche CE, Elemike EE, Oderinlo OO. 2014. Phytochemical screening, antioxidant and antimicrobial activities of *Senna occidentalis* (L.) leaves. **Int J Herb Med** 2: 26 - 30.

Ojewole JA, Amabeoku GJ. 2009. Anticonvulsant effect of *Persea americana* Mill (Lauraceae) (avocado) leaf aqueous extract in mice. **Phytother Res** 20: 696 - 700. **https://doi.org/10.1002/ptr.1940**

Ojewole J, Kamadyaapa DR, Gondwe MM, Moodley K, Musabayane CT. 2007. Cardiovascular effects of *Persea americana* Mill (Lauraceae) (avocado) aqueous leaf extract in experimental animals. **Cardiovasc J South Africa** 18: 69 - 76.

Okpe O, Habila N, Ikwebe J, Upev VA, Okoduwa SI, Isaac OT. 2016. Antimalarial potential of *Carica papaya* and *Vernonia amygdalina* in mice infected with *Plasmodium berghei.* **J Trop Med** 1 - 6. **https://doi.org/10.1155/2016/8738972**

Olejnik A, Kowalska K, Olkowicz M, Rychlik J, Juzwa, W, Myszka K, Dembczynski R, Bialas W. 2015. Anti-inflammatory effects of gastrointestinal digested *Sambucus nigra* L. fruit extract analysed in co-cultured intestinal epithelial cells and lipopolysaccharide-stimulated macrophages. **J Funct Foods** 19: 649 - 660. **https://doi.org/10.1016/j.jff.2015.09.064**

Oliveira FCS, Barros RFM, Moita Neto JM. 2010a. Plantas medicinais utilizadas em comunidades rurais de Oeiras, semiárido piauiense. **Rev Bras Plant Med** 12: 282 - 301. **https://doi.org/10.1590/s1516-05722010000300006**

Oliveira GL, Oliveira AFM, Andrade LHC. 2010b. Plantas medicinais utilizadas na comunidade urbana de Muribeca, Nordeste do Brasil. **Acta Bot Bras** 24: 571 - 577. **https://doi.org/10.1590/s0102-33062010000200026**

Oliveira MP, Costa CDF, Herculano EA, Aquino PGV, Sant'ana AEG, Ribeiro ÊA, Araújo-Júnior JX. 2012a. Cardiovascular effects of the *Aspidosperma macrocarpum* leaves ethanol extract in rats. **Pharmacologyonline** 1: 102 - 107.

Oliveira PC, Conceição EC, Oliveira PA, Nascimento MV, Costa EA, Paula JR, Bara MTF. 2012b. Obtaining a dry extract of *Pterodon emarginatus* (Fabaceae) fruits by spray-drying. **J Pharm Res** 5: 641 - 645.

Oliveira DM, Melo FG, Balogun SO, Flach A, Souza ECA, souza GP, Rocha INA, Costa LAMA, Soares IM, Silva LI, Ascêndio SD, Martins DIO. 2015. Antibacterial mode of action of the hydroethanolic extract of *Leonotis nepetifolia* (L.) R. Br. involves bacterial membrane perturbations. **J Ethnopharmacol** 172: 356 - 363. **https://doi.org/10.1016/j.jep.2015.06.027**

Oliveira VB, Ferreira AVM, Oliveira MC, Teixeira MM, Brandão MGL. 2014. Effects of *Xylopia aromatica* (Lam.) Mart. fruit on metabolic and inflammatory dysfunction induced by high refined carbohydrate-containing-diet in mice. **Food Res Int** 62: 541 - 550. **https://doi.org/10.1016/j.foodres.2014.03.066**

Oliveira RG, Mahon CP, Ascêncio PG, Ascêncio SD, Balogun SO, Oliveira MDT. 2014. Evaluation of anti-inflammatory activity of hydroethanolic extract of *Dilodendron bipinnatum* Radlk. **J Ethnopharmacol** 155: 387 - 395. **https://doi.org/10.1016/j.jep.2014.05.041**

Oliveira AEMFM, Bezerra DC, Duarte JL, Cruz RAS, Souto RNP, Ferreira RMA, Nogueira J, Conceição EC, Leitão S, Bizzo HR, Gama PE, Carvalho JCT, Fernandes CP. 2017. Essential oil from *Pterodon emarginatus* as a promising natural raw material for larvicidal nanoemulsions against a tropical disease vector. **Sustain Chem Pharm** 6: 1 - 9. **https://doi.org/10.1016/j.scp.2017.06.001**

Oliveira-Júnior RG, Souza GR, Ferraz CAA, Oliveira AP. 2017. Development and evaluation of photoprotective O/W emulsions containing hydroalcoholic extract of *Neoglaziovia variegata* (Bromeliaceae). **Sci World J** 1: 1 - 8. **https://doi.org/10.1155/2017/5019458**

Oliveira RG, Miyajima F, Castilho GRC, Damazo AS, Macho A, Martins DTO. 2018. Dilodendron bipinnatum Radlk. ameliorates airway inflammation through multiple targets in a murine model of ovalbumin-induced allergic airway disease. **J Ethnopharmacol** 226: 17 - 25. https://doi.org/10.1016/j.jep.2018.07.025

Oliveira DCS, Kaneko TM, Young MCM, Murakami C, Cordeiro I, Moreno PRH. 2018. Chemical composition, antimicrobial and antioxidante activities of Eugenia dysenterica DC essential oil. Emerg Sci J 2: 410 - 416. https://doi.org/10.28991/esj-2018-01160 Oluwa AA, Avoseh ON, Omikorede O, Ogunwande IA, Lawal OA. 2017. Study on the chemical constituents and anti-inflammatory activity of essential oil of *Petiveria alliacea* L. **Br J Pharmacol** 15: 1 - 8. **https://doi.org/10.9734/bjpr/2017/31331**

Omodamiro OD, Jimoh MA, Ewa IC, 2016. Hepatoprotective and haemopoeitic activity of ethanol extract of *Persea americana* seed in paracetamol induced toxicity in wistar albino rat. **Int J Pharm Pharm Res** 5: 1 - 17.

Ordoñez AAL, Gomez JD, Cudmani NM, Vattuone MA, Isla MI, 2003. Antimicrobial activity of nine extracts of *Sechium edule* (Jacq.) Swartz. **Microb Ecol Health Dis** 15: 33 - 39. **https://doi.org/10.3402/mehd.v15i1.7975**

Ordoñez AAL, Gomez JD, Vattuone MA, Isla MI. 2006. Antioxidant activities of *Sechium edule* (Jacq.) Swartz extracts. **Food Chem** 97: 452 - 458. **https://doi.org/10.1016/j.foodchem.2005.05.024**

Orsi PR, Seito LN, Di Stasi LC. 2014. *Hymenaea stigonocarpa* Mart. Ex. Hayne: A tropical medicinal plant with intestinal anti-inflammatory activity in TNBS model of intestinal inflammation in rats. **J Ethnopharmacol** 151: 380 - 385. **https://doi.org/10.1016/j.jep.2013.10.056**

Ortaç D, Cemek M, Karaca T, Büyükokuroğlu ME, Özdemir ZÖ, Kocaman AT, Göneş S, 2018. *In vivo* anti-ulcerogenic effect of okra (*Abelmoschus esculentus*) on ethanol-induced acute gastric mucosal lesions. **Pharm Biol** 56: 165 - 175. **https://doi.org/10.1080/13880209.2018.1442481**

Oso CE. 2013. Anti-motility and reductions in the concentrations of gut electrolytes: Bases for the anti-spastic use of the leaves of *Persea americana* in folk medicine. **J Pharm Res** 6: 336 - 341. **https://doi.org/10.1016/j.jopr.2013.03.013**

Osorio E, Arango GJ, Jimenez N, Alzate F, Ruiz G, Gutierrez D, 2007. Antiprotozoal and cytotoxic activities *in vitro* of Colombian Annonaceae. **J Ethnopharmacol** 111: 630 - 635. **https://doi.org/10.1016/j.jep.2007.01.015**

Owoyemi O, Oladunmoye MK. 2017. Phytochemical screening and antibacterial activities of *Bidens pilosa* L. and *Tridax procumbens* L. on skin pathogens. **Int J Mod Biol Med** 8: 24 - 46.

Owolabi MA, Jaja SI, Coker HAB. 2005. Vasorelaxant action of aqueous extract of the leaves of *Persea americana* on isolated thoracic rat aorta. **Fitoterapia** 76: 567 - 573. **https://doi.org/10.1016/j.fitote.2005.04.020**

Ozsoy-Sacan O, Yanardag R, Orak H, Ozgey Y, Yarat A, Tunali T. 2006. Effects of parsley (*Petroselinum crispum*) extract versus glibornuride on the liver of streptozotocin-induced diabetic rats. **J Ethnopharmacol** 104: 175 - 181. **https://doi.org/10.1016/j.jep.2005.08.069**

Pal S, Kumar P, Ramahrishna E, Kumar S, Porwal K, Kumar B, Arya KR, Maurya R, Chattopadhyay N. 2019. Extract and fraction of *Cassia occidentalis* L. (a synonym of *Senna occidentalis*) have osteogenic effect and prevent glucocorticoid-induced osteopenia. **J Ethnopharmacol** 235: 8 - 18. **https://doi.org/10.1016/j.jep.2019.01.029**

Pandey AK, Singh P, Tripathi NN. 2014. Chemistry and bioactivities of essential oils of some Ocimum species: an overview. **Asian Pac J Trop Biomed** 4: 682 - 694. **https://doi.org/10.12980/apjtb.4.2014c77**

Pandey BP, Thapa R, Upreti A. 2017. Chemical composition, antioxidant and antibacterial activities of essential oil and methanol extract of *Artemisia vulgaris* and *Gaultheria fragrantissima* collected from Nepal. **Asian Pac J Trop Med** 10: 952 - 959. **https://doi.org/10.1016/j.apjtm.2017.09.005**

Pandey P, Mehta A, Hajra S. 2016. Evaluation of the immunomodulatory activity of the alcoholic extracts of *Ruta graveolens* leaves. **Int J Pharm Pharm Sci** 8: 4 - 8. **https://doi.org/10.22159/ijpps.2016v8i11.15531**

Pandey S, Walpole C, Cabot PJ, Shae PN, Batra J, Hewavitharana AK. 2017. Selective anti-proliferative activities of *Carica papaya* leaf juice extracts against prostate cancer. **Biomed Pharmacother** 89: 515 - 523. **https://doi.org/10.1016/j.biopha.2017.02.050**

Pardo-de-Santayana M, Tardío J, Blanco E, Carvalho AM, Lastra JJ, San-Miguel E, Morales R. 2007. Traditional knowledge of wild edible plants used in the northwest of the Iberian Peninsula (Spain and Portugal): a comparative study. **J Ethnobiol Ethnomed** 3: 1 - 11. **https://doi.org/10.1186/1746-4269-3-27**

Paredes PFM, Vasconcelos FR, Paim RTT, Marques MMM, De Morais SM, Lira SM, Braquehais ID, Vieira ÍGP, Mendes FNP, Guedes MIF. 2016. Screening of bioactivities and toxicity of *Cnidoscolus quercifolius* Pohl. **Evid-Based Complement Altern Med** 3: 1 - 9. **https://doi.org/10.1155/2016/7930563**

Parmar J, Sharma P, Verma P, Sharma P, Goyal PK. 2010. Chemopreventive action of *Syzygium cumini* on DMBA - induced skin papillomagenesis in mice. **Asian Pac J Cancer** P 11: 261 - 266.

Parra-Delgado H, Ruiz GG, Camacho NA, Martínez-Vázquez M. 2004. Anti-inflammatory activity of some extracts and isolates from *Leonotis nepetaefolia* on TPA-induced edema model. **Rev Soc Quim Mex** 48: 293 - 295.

Pascoa H, Diniz DGA, Florentino IF, Costa EA, Bara MTF. 2015. Microemulsion based on *Pterodon emarginatus* oil and its anti-inflammatory potential. **Braz J Pharm Sci** 51: 117 - 126. **https://doi.org/10.1590/s1984-82502015000100013**

Pavela R. 2018. Essential oils from *Foeniculum vulgare* Miller as safe environmental insecticide against the aphid *Myzus persicae* Sulzer. **Environ Sci Pollut Res** 25: 10904 - 10910. **https://doi.org/10.1007/s11356-018-1398-3**

Penna C, Marino S, Vivot E, Cruañes MC, Muñoz JD, Cruañes J, Ferraro G, Gutkind G, Martino V. 2001. Antimicrobial activity of Argentine plants used in the treatment of infectious diseases. Isolation of active compounds from *Sebastiania brasiliensis*. **J Ethnopharmacol** 77: 37 - 40. **https://doi.org/10.1016/s0378-8741(01)00266-5**

Pereira TM, Silva VCB, Ribeiro-Neto JA, Alves SN, Lima LARS. 2014. Larvicidal activity of the methanol extract and fractions of the green fruits of *Solanum lycocarpum* (Solanaceae) against the vector *Culex quinquefasciatus* (Diptera: Culicidae). **Rev Soc Bras Med Trop** 47: 646 - 648. **https://doi.org/10.1590/0037-8682-0010-2014**

Perez AC, Franca V, Daldegan JR VM, Duarte IDG. 2006. Effect of *Solanum lycocarpum* St. Hill on various haematological parameters in diabetic rats. **J Ethnopharmacol** 106: 442-444. **https://doi.org/10.1016/j.jep.2006.02.017**

Pham HNT, Sakofja, Vuong QV, Bowyer MC, Scarlett CJ. 2018. Screening phytochemical content, antioxidant, antimicrobial and cytotoxic activities of *Catharanthus roseus* (L.) G. Don stem extract and its fractions. **Biocatal Agric Biotechnol** 16: 405 - 411. **https://doi.org/10.1016/j.bcab.2018.09.005**

Pinto NDCC, Campos LM, Carolina A, Evangelista S, Lemos ASO, Silva TP, Melo RCN, Lourenço CC, Salvador MJ, Carolina A, Apolônio M, Scio E, Fabri RL. 2017. Antimicrobial *Annona muricata* L. (soursop) extract targets the cell membranes of Gram-positive and Gram-negative bacteria. **Ind Crop Prod** 107: 332 - 340. **https://doi.org/10.1016/j.indcrop.2017.05.054**

Pires JM, Mendes FR, Duarte-AlmeidA JM, Negri G, Carlini EA. 2009 Antinociceptive peripheral effect of *Achillea millefolium* L. and *Artemisia vulgaris* L.: both plants known popularly by brand names of analgesic drugs. **Phytother Res** 23: 212 - 219. **https://doi.org/10.1002/ptr.2589**

Qamar KA, Dar A, Siddiqui BS, Kabir N, Aslam H, Ahmed S, Erum S, Habib S, Begum S. 2010. Anticancer activity of *Ocimum basilicum* and the effect of ursolic acid on the cytoskeleton of MCF-7 human breast cancer cells. **Lett Drug Des Discov** 7: 726 - 736. **https://doi.org/10.2174/157018081100701072**6

Quintans JSS, Brito RG, Aquino PGV, França PHB, Siqueira-Lima PS, Santana AEG, Ribeiro EAN, Salvador MJ, Araújo-Júnior JX, Quintans-Júnior LJ. 2014. Antinociceptive activity of *Syzygium cumini* leaves ethanol extract on orofacial nociception protocols in rodents. **Pharm Biol** 52: 762 - 766. **https://doi.org/10.3109/13880209.2013.870582**

Quintão FJO, Tavares RSN, VIeira-Filho SA, Souza GHB, Santos ODH. 2013. Hydroalcoholic extracts of *Vellozia squamata*: study of its nanoemulsions for pharmaceutical or cosmetic applications. **Rev Bras Farmacogn** 23: 101 - 107. **https://doi.org/10.1590/s0102-695x2013005000001**

Raghav SK, Gupta B, AgrawAL C, Goswami K, Das HR. 2006. Anti-inflammatory effect of *Ruta graveolens* L. in murine macrophage cells. **J Ethnopharmacol** 104: 234 - 239. **https://doi.org/10.1016/j.jep.2005.09.008**

Ramírez NM, Toledo RCL, Moreira MEC, Martino HSD, Benjamin LA, Queiroz JH, Ribeiro AQ, ribeiro SMR. 2017. Anti-obesity effects of tea from *Mangifera indica* L. leaves of the Ubá variety in high-fat diet-induced obese rats. **Biomed Pharmacother** 91: 938 - 945. **https://doi.org/10.1016/j.biopha.2017.05.015**

Rampadarath S, Puchooa D, Ranghoo-Sanmukhiya VM. 2014. A comparison of polyphenolic content, antioxidant activity and insecticidal properties of Jatropha species and wild *Ricinus communis* L. found in Mauritius.

Asian Pac J Trop Med 7: S384 - S390. **https://doi.org/10.1016/s1995-7645(14)60263-7**

Rashed K. 2014. Antioxidant potential of *Cedrela odorata* stems extracts and bioactive phytoconstituents. **Hygeia J Drugs Med** 6: 25 - 30. **https://doi.org/10.15254/h.j.d.med.6.2014.119**

Raupp IM, Sereniki A, VIrtuoso A, Cavalcanti CG, Silva EEL, Trebien HA, Miguel OG, Andreatin R. 2008. Anxiolytic-like effect of chronic treatment with *Erythrina velutina* extract in the elevated plus-maze test. **J Ethnopharmacol** 118: 295 - 299. **https://doi.org/10.1016/j.jep.2008.04.016**

Reis CF, Andrade DML, Neves BJ, Oliveira LAR, Pinho JF, Silva LP, Cruz JS, Bara MJF, Andrade CH, Rocha ML. 2015. Blocking the L-type Ca^{2+} channel (Cav 1.2) is the key mechanism for the vascular relaxing effect of *Pterodon* spp. and its isolated diterpene methyl-6α-acetoxy-7β-hydroxyvouacapan-17β-oate. **Pharmacol Res** 100: 242 - 249. **https://doi.org/10.1016/j.phrs.2015.08.007**

Reis GO, Vicente GCFK, Heller MGA, Pizzolatti MG, Frode TS. 2014. *Croton antisyphiliticus* Mart. attenuates the inflammatory response to carrageenan-induced pleurisy in mice. **Inflammopharmacology** 22: 115 - 126. **https://doi.org/10.1007/s10787-013-0184-6**

Rhamani H., Benali, F. T., Koudach, F., Mahmoud, M., Bouazza, S., 2016. Phenolic quantification and antioxidant activity of *Agave americana* leaves depending on solvent and geoclimatic area. **Adv Environm Biol** 10: 194 - 200.

Ribeiro DA, Oliveira LGS, Macêdo DG, Menezes IRA, Costa JGM, Silva MAP, Lacerda SR, Souza MMDA. 2014. Promising medicinal plants for bioprospection in a Cerrado area of Chapada do Araripe, Northeastern Brazil. **J Ethnopharmacol** 155: 1522 - 1533. **https://doi.org/10.1016/j.jep.2014.07.042**

Roduan MRM, Hamid RA, Cheah YK. 2019. Cytotoxicity, antitumor-promoting and antioxidant activities of *Annona muricata in vitro*. **J Herb Med** 15: 1 - 6. **https://doi.org/10.1016/j.hermed.2018.04.004**

Rodrigues AP, Andrade LHC. 2014. Levantamento etnobotânico das plantas medicinais utilizadas pela comunidade de Inhamã, Pernambuco, Nordeste do Brasil. **Rev Bras Plant Med** 16: 721 - 730. **https://doi.org/10.1590/1983-084x/08_159**

Rodrigues IV, Souza JNP, Silva ACG, Chibli LA, Cabral VAR, Vieira Filho AS, Perazzo FF, Guimarães AG, Souza GHB. 2013. Antiedematogenic and antinociceptive effects of leaves extracts from *Protium spruceanum* Benth. (Engler). **Pharmacogn J** 5: 6 - 12**. https://doi.org/10.1016/j.phcgj.2012.08.001**

Rodrigues LB, Martins AOBPB, Cesário FRAS, Castro FF, Albuquerque JR, Fernandes MNM, Silva BAF, Quintans Júnior LJ, Costa JGM, Coutinho HDM, Barbosa R, Menezes RA. 2016. Anti-inflammatory and antiedematogenic activity of the *Ocimum basilicum* essential oil and its main compound estragole: *In vivo* mouse models. **Chem Biol Interact** 257: 14 - 25. **https://doi.org/10.1016/j.cbi.2016.07.026**

Rodrigues PA, Morais SM, Souza CM, Magalhães DV, Vieira ÍGP, Andrade GM, Rao VS, Santos FA. 2012. Gastroprotective effect of *Byrsonima sericea* DC leaf extract against ethanol-induced gastric injury and its possible mechanisms of action. **Ann Acad Braz Acad Sci** 84: 113 - 122. **https://doi.org/10.1590/s0001-37652012005000011**

Rodrigues VG, Duarte LP, Silva RR, Silva GDF, Simões MOM, Takahashi JÁ, Matildes BLG, Fonseca THS, Gomes MA, Filho SAV. 2015. *Salacia crassifolia* (Celastraceae): chemical constituents and antimicrobial activity. **Quim Nova** 38: 237 - 242. **http://doi.org/10.5935/0100-4042.20150001**

Rogerio AP, Fontanari C, Borducchi E, Keller AC, Russo M, Soares EG, Albuquerque DA, Faccioli LH. 2008b. Anti-inflammatory effects of *Lafoensia pacari* and ellagic acid in a murine model of asthma. **Eur J Pharmacol** 580: 262 - 270. **https://doi.org/10.1016/j.ejphar.2007.10.034**

Rogerio AP, Sá-Nunes A, Albuquerque DA, Anibal FF, Medeiros AI, Machado ER, Souza AO, Prado JC, Faccioli LH. 2003. *Lafoensia pacari* extract inhibits IL-5 production in toxocariasis. **Parasite Immunol** 25: 393 - 400. **https://doi.org/10.1046/j.1365-3024.2003.00648.x**

Rogerio AP, Sá-nunes A, Albuquerque DA, Soares EG, Faccioli LH. 2008a. Anti-eosinophilic effect of *Lafoensia pacari* in toxocariasis. **Phytomedicine** 15: 348 - 357. **https://doi.org/10.1016/j.phymed.2007.09.012**

Rogerio AP, Sá-Nunes A, Faccioli LH. 2010. The activity of medicinal plants and secondary metabolites on eosinophilic inflammation. **Pharmacol Res** 62: 298 - 307. **https://doi.org/10.1016/j.phrs.2010.04.005**

Rosado-Aguilar JA, Aguilar-caballero A, Rodriguez-Vivas RI, Borges-Argaez R, Garcia-Vazquez Z, Mendez-Gonzalez M. 2010. Acaricidal activity of extracts from *Petiveria alliacea* (Phytolaccaceae) against the cattle tick, *Rhipicephalus (Boophilus) microplus* (Acari: ixodidae). **Vet Parasitol** 168: 299 - 303. **https://doi.org/10.1016/j.vetpar.2009.11.022**

Rota MC, Herrera A, Martínez RM, Sotomayor JÁ, Jordán MJ. 2008. Antimicrobial activity and chemical composition of *Thymus vulgaris*, *Thymus zygis* and *Thymus hyemalis* essential oils. **Food Control** 19: 681 - 687. **https://doi.org/10.1016/j.foodcont.2007.07.007**

Roumy V, Fabre N, Portet B, Bourdy G, Acebey L, Vigor C, Valentin A, Moulis C. 2009. Four antiprotozoal and antibacterial compounds from *Tapirira guianensis*. **Phytochemistry** 70: 305 - 311. **https://doi.org/10.1016/j.phytochem.2008.10.003**

Royo VA, Mercadante-Simões MO, Ribeiro LM, Oliveira DA, Aguiar MMR, Costa ER, Ferreira PRB. 2015. Anatomy, histochemistry, and antifungal activity of *Anacardium humile* (Anacardiaceae) Leaf. **Microscopy Microanalysis** 21:1549 - 1561. **https://doi.org/10.1017/s1431927615015457**

Ru QM, Wang LJ, Li WM, Wang JL, Ding YT. 2012. *In vitro* antioxidant properties of flavonoids and polysaccharides extract from tobacco (*Nicotiana tabacum* L.) leaves. **Molecules** 17: 11281 - 11291. **https://doi.org/10.3390/molecules170911281**

Ruffa MJ, Ferraro G, Wagner ML, Calcagno ML, Campos RH, Cavallaro L. 2002. Cytotoxic effect of Argentine medicinal plant extracts on human hepatocellular carcinoma cell line. **J Ethnopharmacol** 79: 335 - 339. **https://doi.org/10.1016/s0378-8741(01)00400-7**

Sa FAS, Paula JAM, Santos PA, Oliveira LAR, Oliveira GAR, Liao LM, Paula JR, Silva MRR. 2017. Phytochemical analysis and antimicrobial activity of *Myrcia tomentosa* (Aubl.) DC. Leaves. **Molecules** 22: 1 - 10. **https://doi.org/10.3390/molecules22071100**

Sá S, ChauL LT, Alves VF, Fiuza TS, TresvenzoL LMF, Vaz BG, Ferri PH, Borges LL, Paula JR. 2018. Phytochemistry and antimicrobial activity of *Campomanesia adamantium*. **Rev Bras Farmacogn** 28: 303 - 311. **https://doi.org/10.1016/j.bjp.2018.02.008**

Saldanha AA, Siqueira JM, Castro AHF, Ribeiro Rima, Oliveira FM, De Lopes DO, Pinto FCH, Silva DB, Soares AC. 2016. Anti-inflammatory effects of the butanolic fraction of *Byrsonima verbascifolia* leaves: Mechanisms involving inhibition of tumor necrosis factor alpha, prostaglandin E_2 production and migration of polymorphonuclear leucocyte in vivo experimentation. **Int Immunopharmacol** 31: 123 - 131. **https://doi.org/10.1016/j.intimp.2015.12.031**

Salgueiro ACF, Folmer V, Rosa HS, Costa MT, Boligon AA, Paula FR, Roos DH, Puntel GO. 2016. *In vitro* and *in silico* antioxidant and toxicological activities of *Achyrocline satureioides*. **J Ethnopharmacol** 194: 6 - 14. **https://doi.org/10.1016/j.jep.2016.08.048**

Santana GM, Deus MS, Sousa JM, Ferreira PM, Fernandes HB, Peron AP. 2016. Antimitotic and antimutagenic action of the *Hymenaea stigonocarpa* bark on dividing cells. **Braz J Biol** 76: 520 - 525. **https://doi.org/10.1590/1519-6984.23014**

Santi II, Gatto DA, Machado MRG, Santos PSB, Freitas RA. 2017. Chemical composition, antioxidant and antimicrobial activity of the oil and plant extract *Myrocarpus frondosus* Allemão. **Am J Plant Sci** 8: 1560 - 1571. **https://doi.org/10.4236/ajps.2017.87108**

Santos EN, Lima JC, Noldin VF, Cechinel-Filho V, Rao VS, Lima EF, Schmeda-Hirschamann G, Souza PTTR, Martins DT. 2011. Anti-inflammatory, antinociceptive, and antipyretic effects of methanol extract of *Cariniana rubra* stem bark in animal models. **An Acad Bras Ciênc** 83: 557 - 566. **https://doi.org/10.1590/s0001-37652011005000006**

Santos FV, Colus IMS, Silva MA, Vilegas W, Varanda EA. 2006. Assessment of DNA damage by extracts and fractions of *Strychnos pseudoquina*, a Brazilian medicinal plant with antiulcerogenic activity. **Food Chem Toxicol** 44: 1585 - 1589. **https://doi.org/10.1016/j.fct.2006.03.012**

Sanz-Biset J, Cañigueral S. 2011. Plant use in the medicinal practices known as "strict diets" in Chazuta valley (Peruvian Amazon). **J Etnhopharmacol** 37: 271 - 288. **https://doi.org/10.1016/j.jep.2011.05.021**

Saraiva ME, Ulisses AVRDA, Ribeiro DA, Oliveira LGS, Macêdo DG, Sousa FDFS, Menezes IRA, Sampaio EVDSB, Souza MMDA. 2015. Plant species as a therapeutic resource in areas of the savanna in the state of Pernambuco, Northeast Brazil. **J Ethnopharmacol** 171: 141 - 153. **https://doi.org/10.1016/j.jep.2015.05.034**

Sathish R, Vyawahare B, Natarajan K. 2011. Antiulcerogenic activity of *Lantana camara* leaves on gastric and duodenal ulcers in experimental rats. **J Ethnopharmacol** 134: 195 - 197. **https://doi.org/10.1016/j.jep.2010.11.049**

Scherer R, Lemos MF, Lemos MF, Martinelli GC, Martins JDL, Silva, AG. 2013. Antioxidant and antibacterial

activities and composition of Brazilian spearmint (*Mentha spicata* L.). **Ind Crop Prod** 50: 408 - 413. **https://doi.org/10.1016/j.indcrop.2013.07.007**

Schmourlo G, Mendonça-Filho RR, Alviano CS, Costa SS. 2005. Screening of antifungal agents using ethanol precipitation and bioautography of medicinal and food plants. **J Ethnopharmacol** 96: 563 - 568. **https://doi.org/10.1016/j.jep.2004.10.007**

Shafi PM, Rosamma MK, Jamil K, Reddy PS. 2002. Antibacterial activity of *Syzygium cumini* and *Syzygium travancoricum* leaf essential oils. **Fitoterapia** 73: 414 - 416. **https://doi.org/10.1016/s0367-326x(02)00131-4**

Shahid-Ul-Islam L, Rather FM. 2016. Phytochemistry, biological activities and potential of annatto in natural colorant production for industrial applications - A review. **J Adv Res** 7: 499 - 514. **https://doi.org/10.1016/j.jare.2015.11.002**

Sharafi SM, Rasooli I, Owlia P, Taghizadeh M, Astaneh SDA. 2010. Protective effects of bioactive phytochemicals from *Mentha piperita* with multiple health potentials. **Pharmacogn Mag** 6: 147 - 154. **https://doi.org/10.4103/0973-1296.66926**

Shamkuwar PB, Pawar DP, Chauhan SS. 2012. Antidiarrhoeal activity of seeds of *Syzygium cumini* L. **J Pharm Res** 5: 5537 - 5539.

Sharma A, Rajendran S, Srivastava A, Sharma S, Kundu B. 2017. Antifungal activities of selected essential oils against Fusarium *oxysporum* f. sp. *lycopersici* 1322, with emphasis on *Syzygium aromaticum* essential oil. **J Biosci Bioeng** 123: 308 - 313. **https://doi.org/10.1016/j.jbiosc.2016.09.011**

Sharma N, Prasad K, Chanda S, Bhardwaj V, Tanwar H, Ganju L, Kumar B, Singh SB. 2019. Evaluation of anti-dengue activity of *Carica papaya* aqueous leaf extract and its role in platelet augmentation. **Arch Virol** 164: 1095 - 1110. **https://doi.org/10.1007/s00705-019-04179-z**

Shobha CR, Vishwanath P, Suma MN, Prashant A, Rangaswamy C, Gowdappa BH. 2015. *In vitro* anti-cancer activity of ethanolic extract of *Momordica charantia* on cervical and breast cancer cell lines. **Int J Health Allied Sci** 28: 210 - 217. **https://doi.org/10.4103/2278-344x.167649**

Sibi G, Kaushik K, Dhananjaya K, Ravikumar KR, Mallesha H, Sibi G. 2013. Antibacterial activity of *Sechium edule* (Jacq.) Swartz against gram negative food borne bacteria. **Adv Appl Sci Res** 4: 259 - 261

Simpson R, Morris GA. 2014. The anti-diabetic potential of polysaccharides extracted from members of the cucurbit family: A review. **Bioact Carbohydr Diet Fibre** 3: 106 - 114. **https://doi.org/10.1016/j.bcdf.2014.03.003**

Singh SN, Suri S, Vats P, Sridharan K. 2001. Effect of an antidiabetic extract os *Catharanthus roseus* on enzymatic activities in Streptozotocin induced diabetic rats. **J Ethnopharmacol** 76: 269 - 277. **https://doi.org/10.1016/s0378-8741(01)00254-9**

Silva CAM, Simeoni LA, Silveira D. 2008. Genus Pouteria: Chemistry and biological activity. **Braz J Pharm** 19: 501 - 509.

Silva CG, Herdeiro RS, Mathias CJ, Panek AD, Silveira CS, Rodrigues VP, Rennó MN, Falcão DQ, Cerqueira DM, Minto ABM, Nogueira FLP, Quaresma CH, Silva JFM, Menezes FS, Eleutherio ECA. 2005. Evaluation of antioxidant activity of Brazilian plants. **Pharmacol Res** 52: 229 - 233. **https://doi.org/10.1016/j.phrs.2005.03.008**

Silva CSP, Proença CEB. 2008. Uso e disponibilidade de recursos medicinais no município de Ouro Verde de Goiás, GO. **Acta Bot Bras** 22: 481 - 492. **https://doi.org/10.1590/s0102-33062008000200016**

Silva LI, Karuppusamy A, Miyajima F, Violante IMP, Bieski IGC, Martins DTDO, Balogun SO. 2017. Antimicrobial and antioxidant activities of selected plants used by populations from Juruena Valley, Legal Amazon, Brazil. **Int J Pharm Pharm Sci** 9: 179 - 191. **https://doi.org/10.22159/ijpps.2017v9i5.17086**

Silva VC, Bolzani VS, Young MCM, Lopes MN. 2007. A new antifungal phenolic glycoside derivative, iridoids and lignans from *Alibertia sessilis* (vell.) k. schum. (Rubiaceae). **J Brazil Chem Soc** 18: 1405 - 1409. **https://doi.org/10.1590/s0103-50532007000700017**

Silveira CS, Peçanha CM, Lourenço MCS, Neves Junior I, Menezes FS, Kaplan MAC. 2005. Atividade antimicrobiana dos frutos de *Syagrus oleracea* e *Mauritia vinifera*. **Rev Bras Farmacogn** 15: 143 - 148. **https://doi.org/10.1590/s0102-695x2005000200013**

Sousa RMOF, Rosa JS, Cunha AC, Fernandes-Ferreira M, 2017. Molluscicidal activity of four Apiaceae essential oils against the freshwater snail *Radix peregra*. **J Pest Sci** 90: 971 - 984.

https://doi.org/10.1007/s10340-017-0842-3

Souza ALG, Prado JL, Oliveira Júnior AM, Silva GF. 2015. Conhecimentos tradicionais associados e a prospecção tecnológica da *Harconia speciosa* Gomes. **Revista Geintec** 5: 2652 - 2663.

Souza OV, Vieira GDV, Pinho JJRG, Yamamoto CH, Alves MS. 2010. Antinociceptive and anti-inflammatory activities of the ethanol extract of *Annona muricata* l. leaves in animal models. **Int J Mol Sci** 11: 2067 - 2078. **https://doi.org/10.3390/ijms11052067**

Souza TM, Moreira RRD, Pietro RCLR, Isaac VLB. 2007. Avaliação da atividade anti-séptica de extrato seco de *Stryphnodendron adstringens* (Mart.) Coville e de preparação cosmética contendo este extrato. **Rev Bras Farmacogn** 17: 71 - 75. **https://doi.org/10.1590/s0102-695x2007000100015**

Spadaro F, Costa R, Circosta C, Occhiuto F. 2012. Volatile composition and biological activity of key lime *Citrus aurantifolia* essential oil. **Nat Prod Commun** 7: 1523 - 1526. **https://doi.org/10.1177/1934578x1200701128**

Srivastava P, Kasoju N, Bora U, Chaturvedi R. 2010. Accumulation of betulinic, oleanolic, and ursolic acids in *in vitro* cell cultures of *Lantana camara* L. and their significant cytotoxic effects on HeLa Cell Lines. **Biotechnol Bioproc Eng** 15: 1038 - 1046. **https://doi.org/10.1007/s12257-010-0054-7**

Suffredini IB, Paciencia MLB, Varella AD, Younes RN. 2007. *In vitro* cytotoxic activity of Brazilian plant extracts against human lung, colon and CNS solid cancers and leukemia. **Fitoterapia** 78: 223 - 226. **https://doi.org/10.1016/j.fitote.2006.11.011**

Tadesse E, Engidawork E, Nedi T, Mengistu G. 2017. Evaluation of the anti-diarrheal activity of the aqueous stem extract of *Lantana camara* Linn (Verbenaceae) in mice. **BMC Complem Altern Med** 17: 1 - 8. **https://doi.org/10.1186/s12906-017-1696-1**

Taher YA. 2012. Antinociceptive activity of *Mentha piperita* leaf aqueous extract in mice. **Libyan J Med** 7: 1-5.

Takao LK, Imatomi M, Gualtieri SCJ. 2015. Antioxidant activity and phenolic content of leaf infusions of Myrtaceae species from Cerrado (Brazilian Savanna). **Braz J Biol** 75: 948 - 952. **https://doi.org/10.1590/1519-6984.03314**

Tamashiro Filho P, Olaitan BS, Almeida DAT, Lima JCS, Marson-Ascêncio PG, Ascêncio SD, Rios-Santos F, Martins DTO. 2012. Evaluation of antiulcer activity and mechanism of action of methanol stem bark extract of *Lafoensia pacari* A. St.-Hil. (Lytraceae) in experimental animals. **J Ethnopharmacol** 144: 497 - 505. **https://doi.org/10.1016/j.jep.2012.09.019**

Tan H, Sonam T, Shimizu K. 2017. The potential of triterpenoids from loquat leaves (*Eriobotrya japônica*) for prevention and treatment of skin disorder. **Int J Mol Sci** 18: 1 - 12. **https://doi.org/10.3390/ijms18051030**

Tang EL, Rajarajeswaran J, Fung S, Kanthimathi MS. 2015. *Petroselinum crispum* has antioxidant properties, protects against DNA damage and inhibits proliferation and migration of cancer cells. **J Sci Food Agric** 95: 2763 - 2771. **https://doi.org/10.1002/jsfa.7078**

Taylor PG, Cesari IM, Arsenak M, Ballen D, Abad MJ, Fernández A, Milano B, Ruiz MC, Williams B, Michelangeli F. 2008. Evaluation of Venezuelan medicinal plant extracts for antitumor and antiprotease activities. **Pharm Biol** 44: 349-362. **https://doi.org/10.1080/13880200600748119**

Tenório JAB, Monte DS, Silva TMG, Silva TG, Ramos CS. 2016. *Solanum paniculatum* root extract reduces diarrhea in rats. **Rev Bras Farmacogn** 26: 375 - 378. **https://doi.org/10.1016/j.bjp.2016.02.003**

The Plant List. 2020. **http://www.theplantlist.org**

Thiollent M. 1986. **Metodologia da pesquisa-ação.** Cortez Ed., São Paulo, Brasil.

Thomaz DV, Peixoto LF, Oliveira TS, Fajemiroye JO, Neri HFS, Xavier CH, Costa EA, Santos FCA, Gil ES, Ghedini PC. 2018. Antioxidant and neuroprotective properties of *Eugenia dysenterica* leaves. **Oxid Med Cell Longev** 1 - 9. **https://doi.org/10.1155/2018/3250908**

Tibiriçá E, Almeida A, Cailleaux S, Pimenta D, Kaplan MA, Lessa MA, Figueiredo MR. 2007. Pharmacological mechanisms involved in the vasodilator effects of extracts from *Echinodorus grandiflorus*. **J Ethnopharmacol** 111: 50 - 55. **https://doi.org/10.1016/j.jep.2006.10.030**

Tiuman TS, Santos AO, Ueda-Nakamura T, Dias Filho BP, Nakamura CV. 2011. Recent advances in leishmaniasis treatment. **Int J Infect Dis** 15: 525 - 532. **https://doi.org/10.1016/j.ijid.2011.03.021**

Toledo CEM, Britta EA, Ceole LF, Silva ER, Mello JCP, Dias Filho BP, Nakamura CV, Ueda-Nakamura T. 2011. Antimicrobial and cytotoxic activities of medicinal plants of the Brazilian cerrado, using Brazilian cachaça

as extractor liquid. **J Ethnopharmacol** 133: 420 - 425. **https://doi.org/10.1016/j.jep.2010.10.021**

Torres LRO, Santana FC, Torres-Leal FL, Melo ILP, Yosshime L, Matos-Neto EM, Seelaender MCL, Araujo CMM, Cogliati B, Mancini-Filho J. 2016. Pequi (*Caryocar brasiliense* Camb.) almond oil attenuates carbon tetrachloride-induced acute hepatic injury in rtas: antioxidant and anti-inflammatory effects. **Food Chem Toxicol** 97: 205 - 216. **https://doi.org/10.1016/j.fct.2016.09.009**

Tribess B, Pintarelli GM, Bini LA, Camargo A, Funez LA, Gasper A L, Zeni NALB. 2012. Ethnobotanical study of plants used for therapeutic purposes in the Atlantic Forest region, Southern Brazil. **J Ethnopharmacol** 139: 155 - 163. **https://doi.org/10.1016/j.jep.2015.02.005**

Trotter R, Logan M. 1986. **Informant consensus: a new approach for identifying potentially effective medicinal plants.** In: Etkin NL. Indigenous medicine and diet: biobehavioural approaches. Redgrave, New York, USA. **https://doi.org/10.4324/9781315060385-6**

Vairavan S, Thangapandiyan S, Alisha ASA. 2018. Larvicidal efficacy of *Catharanthus roseus* leaf extracts against the filarial vector *Culex quinquefasciatus* (Diptera: Culicidae). **Int J Pharm Sci Rev Res** 51: 19 - 25.

Vaziri S, Mojarrab M, Farzaei MH, Najafi F, Ghobadi A. 2016. Evaluation of anti-aphthous activity of decoction of *Nicotiana tabacum* leaves as a mouthwash: a placebo-controlled clinical study. **J Tradit Chinese Med** 36: 160 - 164. **https://doi.org/10.1016/s0254-6272(16)30022-x**

Viapiana A, Wesolowski M. 2017. The phenolic contents and antioxidant activities of infusions of *Sambucus nigra* L. **Plant Food Hum Nutr** 72: 82 - 87. **https://doi.org/10.1007/s11130-016-0594-x**

Vieira Júnior GM, Rocha CQ, Rodrigues TS, Hiruma-Lima CA, Vilegas W. 2015. New steroidal saponins and antiulcer activity from *Solanum paniculatum* L. **Food Chem** 186: 160 - 167. **https://doi.org/10.1016/j.foodchem.2014.08.005**

Viscardi DZ, Arrigo JS, Correia CAV, Kassuya CAL, Cardoso CAL, Maldonade IR, Argandoña EJS. 2017. Seed and peel essential oils obtained from *Campomanesia adamantium* fruit inhibit inflammatory and pai parameters in rodents. **Plos One** 12: 1 - 15. **https://doi.org/10.1371/journal.pone.0157107**

Viuda-Martos, Ruiz-Navejas Y, Fernández-Lopez J, Pérez-Alvaréz J. 2008. Antifungal activity of lemon (*Citrus lemon* L.); mandarin (*Citrus reticulata* L.) grapefruit (*Citrus paradise* L.) and orange (*Citrus sinensis* L.) essential oils. **Food Control** 19: 1130 - 138. **https://doi.org/10.1016/j.foodcont.2007.12.003**

Wang H, Chen G, Ren D, Yang ST. 2014. Hipolipidemic activity of Okra is mediated through inhibition os lipogenesis and upregulation of cholesterol degradation. **Phytother Res** 28: 268 - 273. **https://doi.org/10.1002/ptr.4998**

Wientarsih I, Madyastuti R, Prasetyo BF, Aldobrata A, 2012. Anti lithiasis activity of avocado (*Persea americana* Mill) leaves extract in white male rats. **Hayati J Biosci** 19: 49 - 52. **https://doi.org/10.4308/hjb.19.1.49**

Wong PYY, Kitts DD. 2006. Studies on the dual antioxidant and antibacterial properties of parsley (*Petroselinum crispum*) and cilantro (*Coriandrum sativum*) extracts. **Food Chem** 97: 505 - 515. **https://doi.org/10.1016/j.foodchem.2005.05.031**

Wuyep PA, Musa HD, Ezemokwe GC, Nyam DD, Silagyang MD. 2017. Phytochemicals from *Ageratum conyzoides* L. extracts and their antifungal activity against virulent *Aspergillus spp*. **J Acad Ind Res** 6: 32 - 39.

Xie Y, Yang Z, Cao D, Rong F, Ding H, Zhang D. 2015. Antitermitic and antifungal activities of eugenol and its congeners from the flower buds of *Syzgium aromaticum* (clove). **Ind Crop Prod** 77: 780 - 786. **https://doi.org/10.1016/j.indcrop.2015.09.044**

Yadav SS, Meshram GA, Shinde D, Patil RC, Manohar SM, Upadhye MV. 2011. Antibacterial and anticancer activity of bioactive fraction of *Syzygium cumini* L. seeds. **Hayati J Biosci** 18: 118 - 122. **https://doi.org/10.4308/hjb.18.3.118**

Yadav AK, Sirohi P, Saraswat A, Rani M, Singh MP, Srivastava S, Singh NK. 2018. Inhibitory mechanism on combination of phytic acid with methanolic seed extract of *Sygium cumini* and sodium chloride over *Bacillus subtilis*. **Curr Microbiol** 75: 849 - 856. **https://doi.org/10.1007/s00284-018-1457-5**

Yakubu MT, Salimon SS. 2015. Antidiarrhoeal activity of aqueous extract of *Mangifera indica* L. leaves in female albino rats. **J Ethnopharmacol** 163: 135 - 141. **https://doi.org/10.1016/j.jep.2014.12.060**

Yasir M, Das S, Kharya MD, 2010. The phytochemical and pharmacological profile of *Persea americana* Mill. **Pharmacogn Rev** 4: 77 - 84. **https://doi.org/10.4103/0973-7847.65332**

Yousofi A, Daneshmandi S, Soleimani N, Bagheri K, Karimi MH, 2012. Immunomodulatory effect of Parsley

(*Petroselinum crispum*) essential oil on immune cells: Mitogen-activated splenocytes and peritoneal macrophages. **Immunopharm Immunot** 34: 303 - 308. **https://doi.org/10.3109/08923973.2011.603338**

Yuan Z, Hu XP. 2012. Repellent, antifeedant, and toxic activities of *Lantana camara* leaf extract against *Reticulitermes flavipes* (Isoptera: Rhinotermitidae). **J Econ Entomol** 105: 2115 - 2121. **https://doi.org/10.1603/ec12026**

Zaman MA, Iqbal Z, Abbas RZ, Khan MN, Muhammad G, Younus M Ahmed S. 2012. *In vitro* and *in vivo* acaricidal activity of an herbal extract. **Vet Parasitol** 186: 431 - 436. **https://doi.org/10.1016/j.vetpar.2011.11.018**

Zhang H, Lou Z, Chen X, Cui Y, Wang H, Kou X, Ma C. 2019a. Effect of simultaneous ultrasonic and microwave assisted hydrodistillation on the yield, composition, antibacterial and antibio film activity of essential oils from *Citrus medica* L. var. *sarcodactylis*. **J Food Eng** 244: 126 - 135. **https://doi.org/10.1016/j.jfoodeng.2018.09.014**

Zhang J, Yangxu H, Juanwu Y, Zhang X, Zang LQ, Li YM. 2019b. Neutrophil elastase inhibitory effects of pentacyclic triterpenoids from *Eriobotrya japônica* (loquat leaves). **J Ethnopharmacol** 242: 1 - 8. **https://doi.org/10.1016/j.jep.2019.01.037**

Zhou JX, Braun MS, Wetterauer P, Wetterauer B, Wink M. 2019. Antioxidant, cytotoxic and antimicrobial activities of *Glycyrrhiza glabra* L.; *Paeonia lactiflora* Pall., and *Eriobotrya japonica* (Thunb.) Lindl. Extracts. **Medicines** 6: 1 - 16. **https://doi.org/10.3390/medicines6020043**