

UNIVERSIDADE FEDERAL DE UBERLÂNDIA
INSTITUTO DE BIOTECNOLOGIA
CURSO DE GRADUAÇÃO EM BIOTECNOLOGIA

ISABELA VIEIRA DA COSTA

***ETHNOPHARMACOLOGICAL STUDY OF MEDICINAL PLANTS USED BY
POPULATION IN DISTRICT OF TRAVESSÃO DE MINAS, MINAS GERAIS***

PATOS DE MINAS – MG
DEZEMBRO DE 2020

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Artigo Científico apresentado ao Instituto de Biotecnologia da Universidade Federal de Uberlândia como requisito final para a obtenção do título de Bacharel em Biotecnologia.

Profa. Dra. Enyara Rezende Morais

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AGRADECIMENTOS

Agradeço a Deus por me dar forças para seguir em frente mesmo diante dos obstáculos, paciência para entender que tudo acontece no tempo certo e determinação para concluir mais esta etapa na minha vida!

À minha família, a minha mãe Maria de Fátima e o meu pai Josué, por sempre apoiarem minhas escolhas e me motivarem a seguir meus sonhos. Aos meus irmãos Acácio, Arlete, Regina e Raquel pelo companheirismo e por terem sido minha fonte de inspiração para cursar o Ensino Superior. Aos meus cunhados Leonácio, Keoma e Joelma pelo apoio e amizade. E, agradeço a minha avó Albertina por ser meu exemplo de sabedoria e força!

Aos meus amigos Sabrina e Christian que, muito além de colegas de graduação, se tornaram minha segunda família durante essa jornada. Os diversos momentos vividos com vocês foram de grande importância para mim e me trouxeram aprendizados que levarei para vida toda. “Amoras”, sem vocês teria sido tudo mais difícil! Muito obrigada!

À população de Travessão de Minas por colaborarem com esta pesquisa compartilhando seus conhecimentos!

À minha orientadora Dra. Enyara pelo constante incentivo, pelo apoio e pelos diversos ensinamentos!

Aos meus amigos da LiNA Biotec – Polo Patos de Minas pelas experiências que me permitiram compreender ainda mais o quanto o profissional em Biotecnologia pode contribuir para a sociedade!

A todos os meus professores pelos conhecimentos compartilhados ao longo da graduação!

Por fim, a todos meus familiares e amigos que me apoiaram e de alguma forma me ajudaram a chegar até aqui!

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1 **ARTIGO CIENTÍFICO**

2

3 **Ethnopharmacological study of medicinal plants used by population in**

4 **district of Travessão de Minas, Minas Gerais**

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47 **Abstract:** The traditional knowledge of medicinal plants use for diseases treatment is very
48 valuable. The purpose of this present study was to identify the main medicinal plants
49 popularly used in Travessão de Minas – MG to evaluate in the scientific literature and prove
50 the effectiveness of the therapy indicated by the community. Therefore, interviews were
51 carried out with 78 individuals, using a semi-structured questionnaire. As for the answers
52 there was calculated the Relative Importance (RI), Informant Consensus Factor (ICF) and the
53 Responses Frequency (RF). It was identified a total of 145 plants species used, distributed in
54 70 botanical families. *Lippia alba* (Erva-cidreira) had the highest RF = 81 responses (8,9%),
55 the second highest RI = 1,75 and was indicated to treat diseases in the category of mental and
56 behavioral disorders with the highest ICF = 0,81. The scientific literature proves the
57 effectiveness of most therapeutic indications for *Lippia alba*.

58

59 **Key-words:** Natural products. Pharmacognosy. Traditional medicine. Ethnopharmacology.
60 Medicinal plants.

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79 **1. Introduction**

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81 Medicinal plants are used world wide for the treatment of many diseases by different
82 populations, characterized as therapeutic resources that perpetuate in society through the
83 popular knowledge [1, 2, 3, 4]. In 2006, the National Policy on Medicinal Plants and Herbal
84 Medicine was approved in Brazil with the aim that traditional knowledge about the use of
85 medicinal plants and the country's biological, cultural and ethnic diversity could be used in
86 the development of research with medicinal plants [5]. Ethnopharmacological and
87 ethnobotanical studies both national and regional have been carried out to rescue popular
88 knowledge related to the use of medicinal plants as an alternative therapy and demonstrate the
89 relevance of these resources for the health of the investigated populations [6, 7, 8, 9, 10].

90 The World Health Organization – WHO recognizes the importance of the traditional
91 use, but for the usage of a plant with therapeutic purposes, in terms of public health, it is
92 essential to establish of its safety, effectiveness and guarantee the quality of the preparations
93 [11]. The inadequate use of these therapeutic resources might create lead to delayed and/or
94 asymptomatic adverse effects, drug interactions not studied yet and hardly recognized,
95 besides slowing the diagnosis and appropriated treatment [12]. For this reason, it is important
96 to carry out studies that investigate the scientific evidence of popular uses of medicinal plants
97 so that these resources are provided safely and effectively [13].

98 Additionally, ethnopharmacology surveys are very useful at researches related to the
99 development of new drugs, as many pharmaceutical laboratories and universities use the
100 obtained data in these surveys to select natural products with the potential to become drugs
101 [14].

102 Thus, considering the importance of the traditional use of plant species, the concern
103 for the correct use of these resources and the potential for discovering new drugs, the present

104 study pursued to identify the most popular medicinal plants used in district of Travessão de
105 Minas in the municipality of São Francisco-MG and verify in the literature if there was
106 scientific proof of the therapeutic efficacy indicated by the community.

107

108 **2. Material and Methods**

109

110 **2.1 Study area**

111 The district of Travessão de Minas is a rural community that belongs to the
112 municipality of São Francisco and is located in the north of Minas Gerais state, Brazil
113 (latitude 15°49'20.4"S and longitude 44°41'46.8"O). The altitude is approximately 918 meters
114 above the sea level. It is entered within the of Cerrado biome and the characteristic climate is
115 semi-arid. The Cerrado biome is a region that has plant species with huge pharmacological
116 potential [15]. And, as this district is inserted within that biome, it is likely that the people who
117 live in this location already have popular knowledge about the use of certain medicinal plants.
118 This, in addition to helping to maintain tradition in the use of these resources, can direct
119 research have aimed at identifying new drugs.

120

121 **2.2 Data collection**

122 The data were collected through interviews using a semi-structured questionnaire
123 **(Appendix I)**. To proceed with the interviews, the purpose of this study was duly explained to
124 the participants, making sure that they would feel comfortable being interviewed. After
125 accepting the participation, it was presented and read the Informed Consent Form (ICF) which
126 was signed for both parts, interviewer and interviewed. The interviews were carried out with
127 78 individuals of both sexes, over 18 years old. To obtain the sample number, the first

128 participant was selected at random within inside a sample framework and the others after a
129 regular interval ^[16]. The formula used to set the total people amount to be interviewed was:

$$130 \quad \text{Sampling fraction} = \text{desired sample size} / \text{total population}$$

131 In this formula, the sampling fraction represents the proportion of the population to be
132 selected for the interview. The total population was 156 people, which is the number of
133 families/houses benefited by the water of the community well. Therewith:

$$134 \quad \text{Sampling fraction} = 78/156$$

$$135 \quad \text{Sampling fraction} = \frac{1}{2}$$

136 Therefore, the sample size was 78 participants and the sampling fraction was $\frac{1}{2}$, in
137 other words, 1 each 2 individuals were interviewed until reaching the 78 participants.

138 The semi-structured questionnaire was used during the interviewed. Firstly, aspects
139 were asked such age, education, sex and occupation about the interviewed. Then, it was asked
140 if the person had already used medicinal plants for therapeutic purpose, in case of a negative
141 answer, the interview would be shut. The interviewed who responded positively, answered the
142 following variables related to the use of medicinal plants: common plant names, therapeutic
143 indications, used morphological part of the plant; preparation method; method of use;
144 collection area and harvest season; possible adverse effects observed by the user related to the
145 use of these products

146

147 **2.3 Analysis of data**

148 For processing and statistical analysis of the collected data, PASW software (version 22)
149 ^[17] and Microsoft Excel[®], were used, where the Response Frequency (RF) and its percentage
150 of all the varieties related to plants were determined, for this was considered every time that
151 these plants were mentioned by the research participants considering the different indicated

152 uses. The search of the scientific name of all the related plants was based on the popular
153 names mentioned by the participants using scientific books and scientific articles [18].

154 To find the most relevant medicinal plants based on its therapeutic indications the
155 Relative Importance (RI) of each specie was calculated [19]. For this was used the formula $RI =$
156 $NBS + NP$, being $NBS = NBSS / NBSSV$ and $NP = NPS / NPSV$, where NBS is the number of
157 body systems, NBSS is the number of body systems treated by the specific specie, NBSSV is
158 the number of body systems treated by the most versatile species, NP is the number of
159 proprieties, NPS is the number of the proprieties of specific specie, and NPSV is the number
160 of the proprieties of the most versatile species [20]. The highest value of RI must be equal 2
161 [21]. The body systems were defined according to the International Statistical Classification Of
162 Diseases And Related Health Problems provided by the World Health Organization – WHO
163 [22].

164 The Informed Consent Form (ICF) was calculated to determine the main groups of
165 diseases reported by the community of Travessão de Minas. For this, the formula used was:
166 $ICF = nur - nt / nur - 1$, where *nur* is the number of uses in each body system and *nt* is the
167 number of species used within each body system [23].

168 To evaluate the scientific proof of the therapeutic effectiveness of the species with the
169 best rates found, scientific articles, dissertations and relevant thesis were consulted [21].

170

171 **2.4 Ethic Aspects**

172 This present research project was submitted and approved by the Comitê de Ética em
173 Pesquisas com Seres Humanos of the Universidade Federal de Uberlândia previously its
174 completion. The approval protocol was made through the report No. 3.289.572.

175

176

177 **3. Results**

178

179 The variables regarding to the interviewed such as education, sex and occupation were
 180 analyzed through frequency tables. Subsequently, these answers were crossed using two
 181 variables at time. Regarding to education, from 78 people, three related that they had never
 182 studied and 75 said that had already studied at some point in life, which is equivalent to 3,8%
 183 and 96,2%, respectively (Table 1).

184

185 Table 1 – Education of the interviewed.

| Education | Frequence | Percentage (%) |
|-----------------------------------|------------------|-----------------------|
| Never studied | 3 | 3,8 |
| 1 st degree Incomplete | 44 | 56,4 |
| 1 st degree Complete | 9 | 11,5 |
| 2 nd degree Incomplete | 12 | 15,4 |
| 2 nd degree Complete | 5 | 6,4 |
| Higher Education Complete | 5 | 6,4 |
| Total | 78 | 100,0 |

186

187 In sex variable, 70 women and eight men were registered, which is equivalent to
 188 89,7% and 10,3%, respectively (Table 2).

189

190 Table 2 – Sex of the interviewed.

| Sex | Frequence | Percentage (%) |
|------------|------------------|-----------------------|
| Female | 70 | 89,7 |
| Male | 8 | 10,3 |
| Total | 78 | 100,0 |

191

192 None of the occupation mentioned by the population of the Travessão de Minas had a
 193 percentage bigger than 50%. However, it stands out the both with highest occurrence were
 194 rural worker (41%) and housewife (38,5%) (Table 3).

195

196

197 Table 3 – Occupation of the interviewed.

| Occupation | Frecuence | Percentage (%) |
|-----------------------------|------------------|-----------------------|
| Community health agent | 2 | 2,6 |
| Basic services helper | 3 | 3,8 |
| Retired | 5 | 6,4 |
| Community post office clerk | 1 | 1,3 |
| Diarist | 1 | 1,3 |
| Housewife | 30 | 38,5 |
| Teacher | 2 | 2,6 |
| Retired teacher | 1 | 1,3 |
| General services | 1 | 1,3 |
| Rural worker | 32 | 41,0 |
| Total | 78 | 100,0 |

198

199 By crossing the variables, it was obtained that from the 70 interviewed women, the
200 majority 55,71% (39) had an incomplete primary education and 4,3% (3) never studied. While
201 all the eight interviewed men said they had already studied, the majority 62,5% (5) had an
202 incomplete primary education. Based on these data, it can be observed that for both sexes, the
203 prevalent level of education was the incomplete 1st degree (Table 4).

204

205 Table 4 – Crossing of the variables Sex and Education

| Education | Sex | | | |
|-----------------------------------|------------|-------|------|------|
| | Female | % | Male | % |
| Never studied | 3 | 4,3 | 0 | 0 |
| 1 st degree Incomplete | 39 | 55,71 | 5 | 62,5 |
| 1 st degree Complete | 7 | 10,0 | 2 | 25 |
| 2 nd degree Incomplete | 11 | 15,71 | 1 | 12,5 |
| 2 nd degree Complete | 5 | 7,14 | 0 | 0 |
| Higher Education Complete | 5 | 7,14 | 0 | 0 |
| Total | 70 | 100,0 | 8 | 100 |

206

207 When crossing the data of the occupation and sex variables, it was obtained that of the
208 70 women, most were housewives (42,86%) and rural worker (35,7%). From the eight-male
209 interviewed, most were rural workers (87,5%) (Table 5).

210

211

212 Table 5 – Crossing of the variables Sex and Occupation.

| Occupation | Sex | | | |
|-----------------------------|--------|--------|------|------|
| | Female | % | Male | % |
| Communityhealthagent | 2 | 2,86 | 0 | 0 |
| Basic serviceshelper | 3 | 4,29 | 0 | 0 |
| Retired | 4 | 5,71 | 1 | 12,5 |
| Community post office clerk | 1 | 1,43 | 0 | 0 |
| Diarist | 1 | 1,43 | 0 | 0 |
| Housewife | 30 | 42,86 | 0 | 0 |
| Teacher | 2 | 2,86 | 0 | 0 |
| Retiredteacher | 1 | 1,43 | 0 | 0 |
| General services | 1 | 1,43 | 0 | 0 |
| Rural worker | 25 | 35,70 | 7 | 87,5 |
| Total | 70 | 100,00 | 8 | 100 |

213

214 Statistical parameters were measured from the ages of men and women participating in
 215 this study. For the female sex, the mean age was 53,2 years old ($\pm 13,8$ years old), the middle
 216 age was 52 years old and the maximum and minimum age were 91 and 26 years old,
 217 respectively. In relation to men, the mean age was 58,9 years old ($\pm 13,7$), the middle age was
 218 57 years old and the maximum and minimum were 78 and 40 years old, respectively (Table
 219 6).

220

221 Table 6 – Middle, median, maximum and minimum ages of men and women interview participants.

| Sex | Age | | | |
|--------|-----------------|--------|---------|---------|
| | Middle | Median | Maximum | Minimum |
| Female | 53,2 \pm 13,8 | 52,0 | 91,0 | 26,0 |
| Male | 58,9 \pm 13,7 | 57,0 | 78,0 | 40,0 |

222

223 A total of 145 species of medicinal plants used by the research participants were
 224 reported. For each variable related to the use of these plants an amount of 909 answers was
 225 calculated. Among the most mentioned therapeutic indications it is the flu (21,8%),
 226 hypertension (6,6%), calming effect (5,4%), anti-inflammatory (5%) and against the
 227 indigestion (4,8%). In relation to the used part, the leaves obtained the highest frequency, with
 228 516 answers (56,8%). It was noted that the most medicinal plants are prepared as a tea,
 229 because besides it has 592 answers (65,1%) for the preparation method, it was also mentioned

230 with others types of preparation. 416 answers (45,8%) were obtained that the medicinal plants
 231 are used three times a day, corresponding to the highest percent of the answers. The most
 232 frequent location for collecting these plants was the own house of the participants, with 513
 233 answers (56,4%). In addition to this total, 63 answers (6,9%) affirmed to collect these plants,
 234 both at home and at neighbor's homes in the Travessão de Minas community. As for the
 235 harvest season, 756 answers (83,2%) affirmed that most the plants can be harvested during all
 236 year. As for the probable adverse effects caused by the used of medicinal plants, more than
 237 90% of the participants affirm that they have never felt any discomfort as a result of this
 238 consume.

239 The medicinal plants were distributed in 70 botanical families, among those that
 240 contemplated the largest number of species were Lamiaceae and the Asteraceae, both with 10
 241 responses.

242 In a total of 909 responses, the specie with the highest frequency, 81 responses (8,9%),
 243 was *Lippia alba*, popularly known as Erva-cidreira (Table 7) and its reported therapeutic
 244 indications were as antioxidant, calming, feed detoxifier, diarrhea, headache, shortness of
 245 breath, flatulence, flu, arterial hypertension, arterial hypotension, sleeplessness, indigestion,
 246 improves the immune system, constipation, cardiac problems, gastric problems,
 247 gastrointestinal problems, intestinal problems and common cold.

248 Of all the species reported, 15 (10,34%) had an $RI > 1$, with the five highest values
 249 being *Chenopodium ambrosioides* ($RI=1,84$); *Lippia alba* ($RI=1,75$); *Amburana cearensis*
 250 ($RI=1,70$); *Citrus sinensis* ($RI=1,61$) e *Psidium guajava* ($RI=1,51$) (Table 7).

251

252 Table 7 – Medicinal Plants Related By Travessão de Minas Community, MG. RI – Relative Importance. RF- Responses Frequency.

253

| Scientific name | Popular name | Botanical family | Part used | RI | RF |
|---------------------------------|--------------|------------------|-----------|------|----|
| <i>Achyrocline satureioides</i> | Marcela | Asteraceae | Leaves | 0,18 | 1 |
| <i>Acosmium dasycarpum</i> | Unha-D'anta | Fabaceae | Tree bark | 0,18 | 1 |

| | | | | | |
|---------------------------------------|--|------------------------|------------------------------------|------|----|
| <i>Aframomum melegueta</i> | Pimenta-da-costa | Zingiberaceae | Fruits | 0,18 | 1 |
| <i>Ageratum conyzoides</i> | Mentrasito | Asteraceae | Leaves | 0,82 | 6 |
| <i>Allium cepa</i> | Cebola; Cebola branca; Cebola-roxa | Liliaceae | Bulb; Bulb bark | 0,87 | 8 |
| <i>Allium sativum</i> | Alho | Liliaceae | Bulb | 0,76 | 6 |
| <i>Aloe arborescens</i> | Babosa | Asphodelaceae | Leaves | 1,40 | 13 |
| <i>Amburana cearensis</i> | Imburana; Imburana- de-cheiro; Umburana- de-cheiro | Fabaceae- Faboideae | Tree bark; seed | 1,70 | 35 |
| <i>Anacardium occidentale</i> | Caju | Anacardiaceae | Leaves | 0,18 | 1 |
| <i>Anadenanthera peregrina</i> | Angico | Fabaceae | Tree bark | 0,18 | 1 |
| <i>Ananas comosus</i> | Abacaxi | Bromeliaceae | Fruits | 0,18 | 1 |
| <i>Annona muricata</i> | Graviola | Annonaceae | Leaves | 1,05 | 10 |
| <i>Annona squamosa</i> | Pinha | Annonaceae | Leaves | 0,23 | 5 |
| <i>Arnica montana</i> | Arnica | Asteraceae | Leaves | 0,53 | 3 |
| <i>Arrabidaea brachypoda</i> | Cervejinha-do-campo | Bignoniaceae | Tree bark; Root | 0,23 | 2 |
| <i>Artemisia absinthium</i> | Losna | Compositae | Leaves | 0,18 | 1 |
| <i>Aspidosperma pyriforme</i> | Pereiro-branco | Apocynaceae | Bast; Root bast | 0,41 | 3 |
| <i>Astronium fraxinifolium</i> | Gonçalo | Anacardiaceae | Leaves | 0,23 | 2 |
| <i>Baccharis dracunculifolia</i> | Alecrim-do-brejo | Asteraceae | Leaves | 0,18 | 1 |
| <i>Baccharis trimera</i> | Carqueja | Asteraceae | Leaves | 0,18 | 1 |
| <i>Bambusa vulgaris</i> | Bambu | Poaceae | Stem | 0,18 | 1 |
| <i>Beta vulgaris</i> | Beterraba | Chenopodiaceae | Root | 0,36 | 2 |
| <i>Bidens pilosa</i> | Picão | Asteraceae | Leaves; root; seed; Whole plant | 1,22 | 15 |
| <i>Boerhavia diffusa</i> | Pega-pinto | Nyctaginaceae | Root | 0,18 | 1 |
| <i>Brassica oleracea</i> | Couve | Brassicaceae | Leaves | 0,23 | 2 |
| <i>Cajanus cajan</i> | Andú | Fabaceae | Leaves | 0,18 | 1 |
| <i>Camellia sinensis</i> | Chá-da-Índia | Theaceae | Leaves; stem | 0,36 | 3 |
| <i>Capsicum frutescens</i> | Pimenta-malagueta | Solanaceae | Leaves | 0,18 | 1 |
| <i>Carica papaya</i> | Mamão | Caricaceae | Leaves; Flower | 0,37 | 22 |
| <i>Caryocar brasiliense</i> | Pequi | Caryocaraceae | Leaves; Fruits | 0,53 | 3 |
| <i>Casearia sylvestris</i> | Bugre | Salicaceae | Leaves | 0,41 | 3 |
| <i>Celosia argentea</i> | Crista-de-Galo | Amaranthaceae | Leaves | 0,18 | 1 |
| <i>Celtis iguanaea</i> | Juá-mirim | Canabaceae | Leaves | 0,18 | 1 |
| <i>Chenopodium ambrosioides</i> | Erva-de-Santa-Maria; Mastruz | Chenopodiaceae | Leaves; root | 1,84 | 27 |
| <i>Chenopodium quinoa</i> | Quinoa | Chenopodiaceae | Seed | 0,18 | 1 |
| <i>Cinnamomum verum</i> | Canela | Lauraceae | Tree bark | 0,59 | 5 |
| <i>Citrus limon</i> | Limão | Rutaceae | Fruits | 1,12 | 11 |
| <i>Citrus sinensis</i> | Laranja | Rutaceae | Leaves; fruit skin | 1,61 | 32 |
| <i>Cocos nucifera</i> | Coqueiro | Arecaceae | Bast; Fruits | 0,41 | 3 |
| <i>Colocasia esculenta</i> | Inhame | Araceae | Root | 0,18 | 1 |
| <i>Comminphora leptophloeos</i> | Umburana-vermelha | Burseraceae | Tree bark; seed | 0,71 | 4 |
| <i>Cordia leucocephala Moric.</i> | Moleque-duro | Boraginaceae | Leaves | 0,18 | 1 |
| <i>Coriandrum sativum</i> | Coentro | Apiaceae | Seed | 0,76 | 5 |
| <i>Costus spicatus</i> | Cana-de-macaco; | Costaceae | Bast | 0,23 | 3 |

| | Cana-do-brejo | | | | |
|--------------------------------------|------------------------|---------------------|--|------|----|
| <i>Coutarea hexandra</i> Shum. | Quina | Rubiaceae | Bast | 0,18 | 1 |
| <i>Cucurbita</i> spp. | Abóbora | Cucurbitacea | Seed | 0,36 | 2 |
| <i>Curcuma longa</i> | Açafrão | Zingiberaceae | Leaves; Root | 0,94 | 6 |
| <i>Cymbopogon citratus</i> | Capim-Santo | Poaceae | Leaves; root; stem | 1,43 | 72 |
| <i>Cyperus esculentus</i> | Junco | Cyperaceae | Root | 0,18 | 1 |
| <i>Dipteryx alata</i> | Baru | Fabaceae | Bast | 0,71 | 4 |
| <i>Dorstenia brasiliensis</i> | Carapiá | Moraceae | Leaves; root | 0,18 | 2 |
| <i>Equisetum</i> sp. | Cavalinha | Equisetaceae | Leaves; stem | 0,18 | 1 |
| <i>Eruca sativa</i> | Rúcula | Brassicaceae | Leaves | 0,18 | 1 |
| <i>Eucalyptus globulus</i> | Eucalipto-cheiroso | Myrtaceae | Leaves | 0,36 | 3 |
| <i>Eugenia dysenterica</i> | Cagaita | Myrtaceae | Leaves; bast | 0,36 | 2 |
| <i>Eugenia uniflora</i> | Pitanga | Myrtaceae | Leaves | 0,36 | 2 |
| <i>Genipa americana</i> | Jenipapo | Rubiaceae | Fruits | 0,18 | 1 |
| <i>Gomphrena globosa</i> | Perpétua | Amaranthaceae | Flower | 0,36 | 3 |
| <i>Gossypium hirsutum</i> | Algodão | Malvaceae | Leaves; tree bark; stem; green fruit; seed | 1,22 | 14 |
| <i>Handroanthus impetiginosus</i> | Ipê-roxo | Bignoniaceae | Tree bark | 0,36 | 3 |
| <i>Hibiscus sabdariffa</i> | Ibisco | Malvaceae | Flower | 0,34 | 4 |
| <i>Hybanthus calceolaria</i> | Papaconha | Violaceae | Root | 0,18 | 1 |
| <i>Hymenaea courbaril</i> | Jatobá | Fabaceae | Tree bark; Bast | 0,59 | 6 |
| <i>Illicium verum</i> | Anis-estrelado | Schisandraceae | Fruits | 0,18 | 1 |
| <i>Ipomoea batatas</i> | Batata-doce | Convolvulácea | Leaves | 0,18 | 1 |
| <i>Jatropha gossypifolia</i> | Pião-roxo | Euphorbiaceae | Leaves | 0,18 | 1 |
| <i>Kalanchoe daigremontiana</i> | Aranto | Crassulaceae | Leaves | 0,36 | 3 |
| <i>Kalanchoe pinnata</i> | Folha-santa | Crassulaceae | Leaves | 0,69 | 9 |
| <i>Lactuca sativa</i> | Alface | Asteraceae | Root | 0,18 | 1 |
| <i>Lafoensia pacari</i> | Pacari | Lythraceae | Bast | 0,18 | 1 |
| <i>Leonotis nepetifolia</i> | Cordão-de-frade | Lamiaceae | Leaves | 0,18 | 1 |
| <i>Libidibia ferrea</i> | Pau-ferro | Fabaceae | Seed | 0,18 | 1 |
| <i>Licaria puchury</i> | Pixuri | Lauraceae | Seed | 0,18 | 1 |
| <i>Linum Usitatissimum</i> | Linhaça | Linaceae | Seed | 0,53 | 3 |
| <i>Lippia alba.</i> | Erva-Cidreira | Verbenaceae | Leaves; stalk; Flower; root | 1,75 | 81 |
| <i>Macrosyphonia velame</i> | Velame | Apocynaceae | Leaf; root | 0,18 | 1 |
| <i>Malpighia glabra</i> | Acerola | Malpighiaceae | Leaves | 0,18 | 1 |
| <i>Malva sylvestris</i> | Malvão; Malva-vermelha | Malvaceae | Leaves | 0,36 | 2 |
| <i>Mangifera indica</i> L. cv. Comum | Manga-comum | Anacardiaceae | Leaves | 0,18 | 1 |
| <i>Matricaria chamomilla</i> | Camomila | Asteraceae | Flower; seed | 0,41 | 4 |
| <i>Mentha arvensis</i> | Vick | Lamiaceae | Leaves; bast | 1,61 | 20 |
| <i>Mentha piperita</i> | Temperão | Lamiaceae | Leaves; stem | 0,41 | 7 |
| <i>Mentha pulegium</i> | Poejo | Lamiaceae | Leaves; stem; root | 0,18 | 25 |
| <i>Mentha spicata</i> | Hortelã | Lamiaceae | Leaves; root; stem | 0,71 | 52 |
| <i>Miconia albicans</i> | Canela-de-velho | Melastomatacea e | Leaves | 0,18 | 4 |
| <i>Mikania glomerata</i> | Guaco | Asteracea | Leaves | 0,76 | 9 |

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|---|---------------------|---|---|------|----|
| <i>Momordica charantia</i> | São-caetano | Cucurbitaceae | Leaves; fruits | 0,23 | 4 |
| <i>Morinda citrifolia</i> | Noni | Rubiaceae | Fruits | 0,18 | 3 |
| <i>Moringa oleifera</i> | Moringa | Moringaceae | Leaves; Tree bark; seed | 0,36 | 5 |
| <i>Morus nigra</i> | Amora | Moraceae | Leaves; tree bark | 0,94 | 12 |
| <i>Myristica fragrans</i> | Nós moscada | Myristicaceae | Seed | 1,43 | 4 |
| <i>Nasturtium officinale</i> | Agrião | Brassicaceae | Leaves; seed | 0,18 | 2 |
| <i>Ocimum canum</i> | Alfavaca; Manjeriço | Lamiaceae | Leaves; stem; Flower; root; whole plant | 0,71 | 30 |
| <i>Origanum vulgare</i> | Orégano | Lamiaceae | Leaves | 0,18 | 1 |
| <i>Passiflora cincinnata</i> | Maracujá-do-mato | Passifloraceae | Leaves; Fruits | 0,18 | 2 |
| <i>Passiflora edulis</i> | Maracujá | Passifloraceae | Fruit skin; Leaves; Fruits | 0,18 | 7 |
| <i>Pereskia aculeata</i> | Ora-pro-nóbis | Cactaceae | Leaves | 0,36 | 2 |
| <i>Persea americana</i> | Abacate | Lauraceae | Leaves; Seed | 0,36 | 8 |
| <i>Petiveria alliacea</i> | Tipí | Phytolaccaceae | Leaves | 0,36 | 2 |
| <i>Petroselinum crispum</i> | Salsa | Apiaceae | Leaves | 0,18 | 5 |
| <i>Philodendron bipinnatifidum</i> | Imbé | Araceae | Root | 0,36 | 1 |
| <i>Phyllanthus niruri</i> | Quebra-Pedra | Euphorbiaceae | Bast; Leaves; Whole plant | 1,22 | 4 |
| <i>Pilocarpus pennatifolius</i> | Jaborandí | Rutaceae | Leaves; Seed | 0,36 | 4 |
| <i>Pimpinella anisum</i> | Erva-doce | Apiaceae | Leaves; seed | 0,34 | 3 |
| <i>Plantago major</i> | Confrei; Transagem | Plantaginaceae | Leaves; root; seed; Whole plant | 0,18 | 16 |
| <i>Plectranthus barbatus</i> | Boldo; Sete-dor | Lamiaceae | Leaves | 0,59 | 31 |
| <i>Pluchea sagittalis</i> | Quitoco | Asteraceae | Leaves; Flower | 0,18 | 2 |
| <i>Plumeria lancifolia;</i> <i>Passiflora alata;</i> <i>Citrus aurantium</i> | Saúde-da-mulher | Apocynaceae; Passifloraceae; Rutaceae | Leaves | 0,18 | 2 |
| <i>Psidium guajava</i> | Goiaba | Myrtaceae | Leaves | 0,18 | 16 |
| <i>Pterodon polygalaeflorus</i> | Sucupira | Leguminosae | Seed | 0,36 | 7 |
| <i>Punica granatum</i> | Romã | Punicaceae. | Fruit skin; seed | 0,69 | 8 |
| <i>Qualea grandiflora</i> | Pau-terra | Vochysiaceae | Leaves; tree bark | 0,18 | 1 |
| <i>Ricinus communis</i> | Mamona | Euphorbiaceae | Seed | 0,18 | 1 |
| <i>Rosa alba</i> | Rosa-de-casa | Rosaceae | Flower | 0,18 | 3 |
| <i>Rosmarinus officinalis</i> | Alecrim | Lamiaceae | Leaves | 0,18 | 12 |
| <i>Ruta graveolens</i> | Arruda | Rutaceae | Leaves | 0,18 | 5 |
| <i>Saccharum officinarum</i> | Cana; Cana-caiana | Graminae | Stem; Leaves; Root | 0,53 | 5 |
| <i>Salvia hispanica</i> | Chia | Lamiaceae | Seed | 1,75 | 2 |
| <i>Sambucus nigra</i> | Sabugueiro | Adoxaceae | Leaves; Flower | 0,18 | 8 |
| <i>Schinus terebinthifolius</i> | Aroeira | Anacardiaceae | Tree bark | 0,18 | 2 |
| <i>Sechium edule</i> | Chuchu | Cucurbitacea | Leaves | 0,36 | 1 |
| <i>Senna macranthera</i> | Fedegoso; Sena | Fabaceae | Flower; Leaves; Root | 0,18 | 5 |
| <i>Sesamum indicum</i> | Gergilim | Pedaliaceae | Seed | 0,41 | 1 |
| <i>Sideroxylon obtusifolium</i> | Quixabeira | Sapotaceae | Tree bark; Bast | 0,82 | 9 |
| <i>Solanum lycocarpum</i> | Lobeira | Solanaceae | Fruits | 0,18 | 1 |
| <i>Solanum melongena</i> | Beringela | Solanaceae | Fruits | 0,23 | 2 |
| <i>Solanum nigrum</i> | Melancia-da-praia | Solanaceae | Root | 0,23 | 3 |
| <i>Solanum paniculatum</i> | Jurubeba | Solanaceae | Tree bark; root; Fruits | 0,71 | 7 |
| <i>Solanum tuberosum</i> | Batata-inglesa | Solanaceae | Tuber | 0,18 | 1 |
| <i>Spondias tuberosa</i> | Imbu; Umu | Anacardiacea | Tree bark | 0,53 | 3 |

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|------------------------------------|-----------------------|---------------|-------------------------|------|----|
| <i>Sterculia striata</i> | Chichá | Malvaceae | Leaves | 0,18 | 1 |
| <i>Stryphnodendron polyphyllum</i> | Barbatimão | Fabaceae | Tree bark | 0,53 | 5 |
| <i>Syzygium aromaticum</i> | Cravo; Cravo-da-india | Myrtaceae | Flower; Leaves | 0,46 | 5 |
| <i>Syzygium cumini</i> | Jamelão | Myrtaceae | Leaves | 0,59 | 6 |
| <i>Tamarindus indica</i> | Tomarindo | Leguminosae | Leaves; fruits | 0,18 | 1 |
| <i>Triplaris gardneriana</i> | Pau-Jaú | Polygonaceae | Tree bark; Bast; flower | 0,23 | 4 |
| <i>Tynanthus elegans</i> | Cipo-da-trindade | Bignoniaceae | Leaves | 0,18 | 1 |
| <i>Uncaria tomentosa</i> | Unha-de-Gato | Rubiaceae | Leaves; Whole plant | 0,59 | 4 |
| <i>Vanilla sp.</i> | Baunilha | Orchidaceae | Fruits | 0,18 | 1 |
| <i>Vernonia polyanthes</i> | Assa-peixe | Asteraceae | Leaves | 0,59 | 4 |
| <i>Zea mays</i> | Milho-preto | Poaceae | Corn hair | 0,18 | 1 |
| <i>Zingiber officinale</i> | Gengibre | Zingiberaceae | Leaves; root | 0,92 | 12 |
| <i>Ziziphus joazeiro</i> | Juá | Rhamnaceae | Bast | 0,18 | 1 |

254

255 Through a consultation with International Statistical Classification of Diseases and
 256 Related Health Problems [22], 18 categories were determined to represent the body systems
 257 based on the therapeutic indications cited by the interviewed. Among these, 13 had values of
 258 an Informed Consent Form (ICF) greater than zero. The highest results for ICF were in the
 259 categories of mental and behavior disorders (ICF=0,81), respiratory diseases (ICF=0,78),
 260 digestive tract diseases (ICF=0,68), circulatory system diseases (ICFI=0,65) and ear diseases
 261 and mastoid apophysis (ICF=0,6) (Table 8).

262 Table 8 – Informant Consensus Factor for each body system and the plants classified within each category according to their therapeutic
 263 indication. The categories were classified according to the WHO.

264

| Body Systems/ Code/ ICF | Medicinal species | Therapeutic indications |
|--|---------------------------------|---------------------------|
| Some affections originated in the perinatal period (P00-P96) ICF = 0 | <i>Bidens pilosa</i> | Jaundice |
| Some infectious and parasitic diseases(A00-B99) ICF= 0,48 | <i>Aloe arborescens</i> | Infection |
| | <i>Arnica Montana</i> | Mycosis |
| | <i>Carica papaya</i> | Dengue; Worm |
| | <i>Chenopodium ambrosioides</i> | Antibiotic; Worm |
| | <i>Citrus limon</i> | Worm |
| | <i>Cucurbita spp.</i> | Worm |
| | <i>Curcuma longa</i> | Antibiotic |
| | <i>Eugenia uniflora</i> | Food poisoning |
| | <i>Gossypium hirsutum</i> | Whooping cough; Infection |
| | <i>Mentha spicata</i> | Worm |
| | <i>Plantago major</i> | Antibiotic; Infection |
| <i>Psidium guajava</i> | Food poisoning | |

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|---|---------------------------------|---|
| | <i>Ruta graveolens</i> | Antibiotic; To kill lice |
| | <i>Sambucus nigra</i> | Chickenpox; Measles; Smallpox |
| | <i>Zea mays</i> | Mumps |
| External causes of morbidity and mortality (V01-Y98) ICF= 0 | <i>Mikania glomerata</i> | Spider bites |
| Diseases of the skin and subcutaneous tissue (L00-L99) ICF = 0,24 | <i>Aloe arborescens</i> | Healing |
| | <i>Amburana cearensis</i> | Healing |
| | <i>Capsicum frutescens</i> | To suppurate boils |
| | <i>Caryocar brasiliense</i> | Healing |
| | <i>Chenopodium ambrosioides</i> | Healing |
| | <i>Comminphora leptophloeos</i> | Healing |
| | <i>Cucurbita spp.</i> | Increases skin elasticity |
| | <i>Curcuma longa</i> | Healing |
| | <i>Genipa americana</i> | Healing |
| | <i>Gossypium hirsutum</i> | Healing |
| | <i>Momordica charantia</i> | Itch |
| | <i>Moringa oleifera</i> | Healing |
| | <i>Passiflora cincinnata</i> | Healing |
| | <i>Psidium guajava</i> | Healing; Itch; Hair loss |
| | <i>Rosmarinus officinalis</i> | Improves skin |
| | <i>Sambucus nigra</i> | Itch; Improves skin |
| | <i>Schinus terebinthifolius</i> | Healing |
| | <i>Sideroxylon obtusifolium</i> | Healing |
| <i>Stryphnodendron polyphyllum</i> | Healing | |
| <i>Uncaria tomentosa</i> | Itch | |
| Diseases of the Circulatory system (I00-I99) ICF = 0,65 | <i>Allium cepa</i> | Arterial hypertension; Varicose veins |
| | <i>Allium sativum</i> | Arterial hypertension; Poor circulation |
| | <i>Amburana cearensis</i> | Poor circulation; Prevents stroke |
| | <i>Annona muricata</i> | Arterial hypertension |
| | <i>Bidens pilosa</i> | Depurative of blood |
| | <i>Camellia sinensis</i> | Arterial hypertension |
| | <i>Casearia sylvestris</i> | Poor circulation |
| | <i>Chenopodium ambrosioides</i> | Poor circulation; Varicose veins |
| | <i>Citrus limon</i> | Poor circulation |
| | <i>Citrus sinensis</i> | Decreases heart rate; Arterial hypertension; Prevents stroke |
| | <i>Curcuma longa</i> | Depurative of blood |
| | <i>Cymbopogon citratus</i> | Arterial hypertension |
| | <i>Lactuca sativa</i> | Arterial hypertension |
| | <i>Licaria puchury</i> | Prevents stroke |
| | <i>Lippia alba</i> | Arterial hypertension; Arterial hypotension; Cardiac problems |
| | <i>Mentha piperita</i> | Arterial hypertension |
| | <i>Mentha pulegium</i> | Arterial hypertension |

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|--|---|---|
| | <i>Morus nigra</i> | Arterial hypertension |
| | <i>Myristica fragrans</i> | Arterial hypertension |
| | <i>Ocimum canum</i> | Arterial hypertension; Heart problems |
| | <i>Passiflora edulis</i> | Arterial hypertension |
| | <i>Petroselinum crispum</i> | Depurative of blood |
| | <i>Plectranthus barbatus</i> | Arterial hypertension |
| | <i>Psidium guajava</i> | Arterial hypertension |
| | <i>Saccharum officinarum</i> | Arterial hypertension |
| | <i>Salvia hispanica</i> | Arterial hypertension |
| | <i>Sechium edule</i> | Hipertensão arterial |
| | <i>Syzygium cumini</i> | Hipertensão arterial |
| Diseases of the digestive system (K00-K93) ICF = 0,68 | <i>Achyrocline satureioides</i> | Stomach problems |
| | <i>Aframomum melegueta</i> | Flatulence |
| | <i>Allium cepa</i> | Laxative effect |
| | <i>Allium sativum</i> | Constipation |
| | <i>Aloe arborescens</i> | Laxative effect; Bile functioning; Gastritis |
| | <i>Anacardium occidentale</i> | Diarrhea |
| | <i>Artemisia absinthium</i> | Diarrhea |
| | <i>Aspidosperma pyrifolium</i> | Stomach problems |
| | <i>Amburana cearensis</i> | Flatulence; Gastritis; H. pylori; Indigestion; Constipation; Stomach problems; Liver problems |
| | <i>Baccharis trimera</i> | Liver problems |
| | <i>Bidens pilosa</i> | Gastritis |
| | <i>Brassica oleracea</i> | Gastritis; Ulcer |
| | <i>Cajanus cajan</i> | Constipation |
| | <i>Camellia sinensis</i> | Flatulence |
| | <i>Carica papaya</i> | Indigestion; Stomach problems; Gastrointestinal problems; Intestinal problems |
| | <i>Chenopodium ambrosioides</i> | Gastritis; Stomach problems |
| | <i>Chenopodium quinoa</i> | Intestinal function |
| | <i>Citrus limon</i> | Indigestion |
| | <i>Citrus sinensis</i> | Flatulence; Indigestion; Constipation; Gastrointestinal problems; Intestinal problems |
| | <i>Cocos nucifera</i> | Detoxifies the liver; Diarrhea |
| | <i>Comminphora leptophloeos</i> | Stomach problems |
| | <i>Coriandrum sativum</i> | Diarrhea; Flatulence |
| | <i>Cymbopogon citratus</i> | Flatulence |
| | <i>Eugenia dysenterica</i> | Diarrhea |
| | <i>Eugenia uniflora</i> | Diarrhea |
| | <i>Gossypium hirsutum</i> | Gastritis; Stomach problems |
| | <i>Hybanthus calceolaria</i> | Laxative effect |
| | <i>Hymenaea courbaril</i> | Gastritis; Ulcer |
| | <i>Ipomoea batatas</i> | Laxative effect |
| | <i>Kalanchoe pinnata</i> | Gastritis |
| <i>Linum Usitatissimum</i> | Intestinal function | |
| <i>Lippia alba</i> | Food detoxifying; Diarrhea; Flatulence; | |

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| | | Indigestion; Constipation; Stomach problems; Gastrointestinal problems; Intestinal problems |
| | <i>Malva sylvestris</i> | Diarrhea |
| | <i>Matricaria chamomilla</i> | Stomach problems |
| | <i>Mentha arvensis</i> | Cold |
| | <i>Mentha spicata</i> | Gastritis; Indigestion; Stomach problems |
| | <i>Miconia albicans</i> | Intestinal problems |
| | <i>Momordica charantia</i> | Intestinal problems |
| | <i>Moringa oleifera</i> | Constipation; Intestinal problems |
| | <i>Myristica fragrans</i> | Flatulence; Constipation |
| | <i>Pilocarpus pennatifolius</i> | Toothache |
| | <i>Pimpinella anisum</i> | Diarrhea |
| | <i>Plectranthus barbatus</i> | Diarrhea; Indigestion; Stomach problems; Gastrointestinal problems; Intestinal problems; Liver problems |
| | <i>Pluchea sagittalis</i> | Indigestion |
| | <i>Psidium guajava</i> | Diarrhea; Flatulence; Indigestion; Intestinal problems |
| | <i>Pterodon polygalaeflorus</i> | Diarrhea; Stomach problems; Colitis |
| | <i>Punica granatum</i> | Gastritis; Tooth infection |
| | <i>Ricinus communis</i> | Laxative effect |
| | <i>Rosa alba</i> | Diarrhea; Laxative effect; Vomit |
| | <i>Rosmarinus officinalis</i> | Indigestion; Stomach problems |
| | <i>Salvia hispanica</i> | Intestinal function |
| | <i>Senna macranthera</i> | Laxative effect |
| | <i>Sesamum indicum</i> | Intestinal function |
| | <i>Sideroxylon obtusifolium</i> | Gastritis; Inflammation in the stomach; Stomach problems |
| | <i>Solanum paniculatum</i> | Liver problems |
| | <i>Solanum tuberosum</i> | Stomach problems |
| | <i>Spondias tuberosa</i> | Diarrhea |
| | <i>Stryphnodendron polyphyllum</i> | Ulcer |
| | <i>Tamarindus indica</i> | Stomach problems |
| | <i>Triplaris gardneriana</i> | Diarrhea; Intestinal function |
| Diseases of the genitourinary system (N00-N99) ICF = 0,55 | <i>Ageratum conyzoides</i> | Colic |
| | <i>Annona muricata</i> | Kidney stone |
| | <i>Annona squamosa</i> | Urinary infection; Kidney stone |
| | <i>Arrabidaea brachypoda</i> | Kidney stone; Kidney problems |
| | <i>Bidens pilosa</i> | Kidney pain; Urinary infection; Bladder Inflammation; Kidney stone |
| | <i>Boerhavia diffusa</i> | Bladder inflammation |
| | <i>Comminphora leptophloeos</i> | Uterus problem |
| | <i>Coriandrum sativum</i> | Colic |
| | <i>Costus spicatus</i> | Kidney pain; Kidney stone |
| | <i>Cymbopogon citratus</i> | Colic |
| | <i>Gossypium hirsutum</i> | Urinary infection |
| | <i>Linum Usitatissimum</i> | Urinary infection |

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| | <i>Mentha piperita</i> | Urinary infection; Uterus problem |
| | <i>Momordica charantia</i> | Vaginal infection |
| | <i>Morus nigra</i> | Menopause |
| | <i>Origanum vulgare</i> | Uterus problems |
| | <i>Persea Americana</i> | Urinary infection; Kidney stone; Kidney problems |
| | <i>Petroselinum crispum</i> | Urinary infection |
| | <i>Phyllanthus niruri</i> | Kidney stone |
| | <i>Plantago major</i> | Colic; Urinary infection; Uterus problems |
| | <i>Pluchea sagittalis</i> | Vaginal infection |
| | <i>Plumeria lancifolia;</i> <i>Passiflora alata; Citrus</i> <i>aurantium</i> | Colic; Uterus problem |
| | <i>Psidium guajava</i> | Urinary problem |
| | <i>Sideroxylon obtusifolium</i> | Uterus problem |
| | <i>Solanum paniculatum</i> | Kidney pain |
| | <i>Zingiber officinale</i> | Colic |
| Diseases of the respiratory system (J00-J99) ICF = 0,78 | <i>Acosmium dasycarpum</i> | Flu |
| | <i>Ageratum conyzoides</i> | Flu; Rhinitis; Sinusitis |
| | <i>Allium cepa</i> | Flu |
| | <i>Allium sativum</i> | Flu |
| | <i>Aloe arborescens</i> | Asthma; Flu |
| | <i>Amburana cearensis</i> | Flu; Pneumonia |
| | <i>Baccharis</i> <i>dracunculifolia</i> | Flu |
| | <i>Beta vulgaris</i> | Flu |
| | <i>Celosia argentea</i> | Flu |
| | <i>Chenopodium</i> <i>ambrosioides</i> | Flu; Cold; Sinusitis |
| | <i>Cinnamomum verum</i> | Flu |
| | <i>Citrus limon</i> | Flu |
| | <i>Citrus sinensis</i> | Flu; Cold |
| | <i>Comminphora</i> <i>leptophloeos</i> | Flu |
| | <i>Coriandrum sativum</i> | Flu |
| | <i>Cymbopogon citratus</i> | Flu; Cold |
| | <i>Dipteryx alata</i> | Bronchitis |
| | <i>Eucalyptus globulus</i> | Flu |
| | <i>Gomphrena globosa</i> | Bronchitis |
| | <i>Gossypium hirsutum</i> | Flu |
| | <i>Hymenaea courbaril</i> | Bronchitis |
| | <i>Kalanchoe pinnata</i> | Bronchitis; Flu |
| | <i>Leonotis nepetifolia</i> | Flu |
| | <i>Linum Usitatissimum</i> | Flu |
| | <i>Lippia alba</i> | Flu, Cold |
| | <i>Macrosyphonia velame</i> | Bronchitis |
| | <i>Malpighia glabra</i> | Flu |

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|---|------------------------------------|---|
| | <i>Malva sylvestris</i> | Flu |
| | <i>Mentha arvensis</i> | Bronchitis; Nasal decongestant; Flu; Cold |
| | <i>Mentha piperita</i> | Flu |
| | <i>Mentha pulegium</i> | Nasal decongestant; Flu; Cold |
| | <i>Mentha spicata</i> | Flu, Cold |
| | <i>Mikania glomerata</i> | Bronchitis; Flu; Pneumonia |
| | <i>Nasturtium officinale</i> | Flu |
| | <i>Ocimum canum</i> | Flu; Sinusitis |
| | <i>Petiveria alliacea</i> | Flu |
| | <i>Pilocarpus pennatifolius</i> | Flu; Cold |
| | <i>Pimpinella anisum</i> | Flu |
| | <i>Plantago major</i> | Sinusitis |
| | <i>Plectranthus barbatus</i> | Flu |
| | <i>Rosmarinus officinalis</i> | Flu; Sinusitis |
| | <i>Ruta graveolens</i> | Flu |
| | <i>Sambucus nigra</i> | Flu |
| | <i>Senna macranthera</i> | Flu |
| | <i>Solanum nigrum</i> | Flu; Pneumonia |
| | <i>Solanum paniculatum</i> | Flu |
| | <i>Spondias tuberosa</i> | Flu |
| | <i>Syzygium aromaticum</i> | Flu |
| | <i>Vanilla sp.</i> | Flu |
| | <i>Vernonia polyanthes</i> | Pneumonia |
| | <i>Zingiber officinale</i> | Flu |
| Diseases of the eye and adnexa (H00-H59) ICF = 0 | <i>Spondias tuberosa</i> | Conjunctivitis |
| Diseases of the ear and mastoid process (H60-H95) ICF= 0,6 | <i>Carica papaya</i> | Labyrinthitis |
| | <i>Citrus sinensis</i> | Labyrinthitis |
| | <i>Morus nigra</i> | Labyrinthitis |
| Diseases of the blood and haematopoietic organs and some immune disorders (D50-D89) ICF = 0,2 | <i>Colocasia esculenta</i> | Anemia |
| | <i>Eruca sativa</i> | Improves the immune system |
| | <i>Kalanchoe daigremontiana</i> | Improves the immune system |
| | <i>Lippia alba</i> | Improves the immune system |
| | <i>Moringa oleifera</i> | Anemia |
| | <i>Ocimum canum</i> | Coagulant |
| | <i>Pereskia aculeate</i> | Anemia |
| | <i>Petroselinum crispum</i> | Anemia |
| | <i>Syzygium cumini</i> | Anemia |
| Diseases of the musculoskeletal system and connective tissue (M00-M99) ICF = 0,2 | <i>Amburana cearensis</i> | Muscle pain |
| | <i>Arnica Montana</i> | Muscle pain |
| | <i>Chenopodium ambrosioides</i> | Leg pain |
| | <i>Libidibia ferrea</i> | Bone pain |
| | <i>Miconia albicans</i> | Arthritis; Arthrosis; Back pain |
| | <i>Persea Americana</i> | Rheumatism |
| | <i>Philodendron bipinnatifidum</i> | Back pain |
| | <i>Plectranthus barbatus</i> | Arthosis |

| | | |
|---|--|--|
| | <i>Tynanthus elegans</i> | Leg pain |
| Endocrine, nutritional and metabolic diseases (E00-E90) ICF = 0,43 | <i>Annona muricata</i> | Diabetes; Decreases the cholesterol; Diuretic |
| | <i>Aspidosperma pyriformis</i> | Helps lose weight; Diabetes |
| | <i>Bidens pilosa</i> | Diuretic |
| | <i>Casearia sylvestris</i> | Helps lose weight; Decreases the cholesterol |
| | <i>Cinnamomum verum</i> | Accelerate the metabolism; Helps lose weight |
| | <i>Citrus limon</i> | Decrease cholesterol |
| | <i>Citrus sinensis</i> | Decrease cholesterol |
| | <i>Curcuma longa</i> | Accelerate the metabolism |
| | <i>Dipteryx alata</i> | Diabetes |
| | <i>Equisetum sp.</i> | Diuretic |
| | <i>Eugenia dysenterica</i> | Diabetes |
| | <i>Hibiscus sabdariffa</i> | Helps lose weight; Helps lose weight; Diuretic; Reduces adipogenesis |
| | <i>Morinda citrifolia</i> | Diabetes |
| | <i>Morus nigra</i> | Reduces the triglyceride; Diuretic; Hormone replacement |
| | <i>Plectranthus barbatus</i> | Diuretic |
| | <i>Qualea grandiflora</i> | Diabetes |
| | <i>Solanum lycocarpum</i> | Diabetes |
| | <i>Solanum melongena</i> | Helps lose weight; Diuretic |
| | <i>Syzygium cumini</i> | Diabetes; Diuretic |
| <i>Vernonia polyanthes</i> | Malnutrition | |
| <i>Zingiber officinale</i> | Accelerate the metabolism; Helps lose weight | |
| Pregnancy, childbirth and puerperium (O00-O99) ICF = 0 | <i>Ageratum conyzoides</i> | Used after childbirth |
| | <i>Caryocar brasiliense</i> | Helps in contraction for childbirth |
| | <i>Mentha spicata</i> | Abortive |
| Injury, poisoning and some other consequences of external causes (S00-T98) ICF = 0 | <i>Aloe arborescens Miller</i> | Burn |
| | <i>Senna macranthera</i> | Allergy |
| Neoplasms [tumors] (C00-D48) ICF = 0,29 | <i>Aloe arborescens Miller</i> | Anti-carcinogenic |
| | <i>Annona muricata</i> | Anti-carcinogenic; Tumor treatment |
| | <i>Chenopodium ambrosioides</i> | Anti-carcinogenic |
| | <i>Dipteryx alata</i> | Anti-carcinogenic |
| | <i>Handroanthus impetiginosus</i> | Anti-carcinogenic |
| | <i>Kalanchoe daigremontiana</i> | Anti-carcinogenic |
| | <i>Lafoensia pacari</i> | To prevent prostate cancer |
| | <i>Momordica charantia</i> | anti-carcinogenic |
| | <i>Morinda citrifolia</i> | Anti-carcinogenic |
| | <i>Punica granatum</i> | Myoma |
| | <i>Uncaria tomentosa</i> | Anti-carcinogenic |
| Symptoms, signs and abnormal findings of clinical and laboratory tests, not elsewhere classified (R00-R99) ICF = 0,59 | <i>Ageratum conyzoides</i> | Anti-inflammatory |
| | <i>Allium cepa</i> | Anti-inflammatory; Headache; Cough |
| | <i>Allium sativum</i> | Throat inflammation |
| | <i>Aloe arborescens</i> | Hair growth |

| | |
|-----------------------------------|---|
| <i>Amburana cearensis</i> | Anti-inflammatory; Pain; Headache; Fever; Cough |
| <i>Anadenanthera peregrine</i> | Expectorant |
| <i>Ananas comosus</i> | Expectorant |
| <i>Annona muricata</i> | Decreases the glucose |
| <i>Arnica montana</i> | Pain |
| <i>Astronium fraxinifolium</i> | Pain; Swelling |
| <i>Bambusa vulgaris</i> | Hair growth |
| <i>Beta vulgaris</i> | Cough |
| <i>Bidens pilosa</i> | Anti-inflammatory |
| <i>Caryocar brasiliense</i> | Hoarseness |
| <i>Celtis iguanaea</i> | Helps in tooth birth in children |
| <i>Chenopodium ambrosioides</i> | Anti-inflammatory; Headache; Expectorant; Fever |
| <i>Cinnamomum verum</i> | Cough |
| <i>Citrus limon</i> | Antiseptic; Headache |
| <i>Citrus sinensis</i> | Fever |
| <i>Cocos nucifera</i> | Swelling |
| <i>Cordia leucocephala</i> | Helps the child to walk fast |
| <i>Coriandrum sativum</i> | Hoarseness |
| <i>Coutarea hexandra</i> | Body aches |
| <i>Curcuma longa</i> | Anti-inflammatory; Hoarseness |
| <i>Cymbopogon citratus</i> | Anti-inflammatory; Headache; Shortness of breath; Fever; Cough |
| <i>Cyperus esculentus</i> | Helps in tooth birth in children |
| <i>Dipteryx alata</i> | Expectorant |
| <i>Dorstenia brasiliensis</i> | Fever |
| <i>Eucalyptus globulus</i> | Headache |
| <i>Gomphrena globosa</i> | Cough |
| <i>Gossypium hirsutum</i> | Anti-inflammatory; Cough |
| <i>Handroanthus impetiginosus</i> | Anti-inflammatory |
| <i>Hymenaea courbaril</i> | Anti-inflammatory |
| <i>Illicium verum</i> | Improves memory |
| <i>Kalanchoe pinnata</i> | Anti-inflammatory; Headache; Cough |
| <i>Lippia alba</i> | Antioxidant; Headache; Shortness of breath |
| <i>Mangifera indica</i> | Cough |
| <i>Mentha arvensis</i> | Expectorant |
| <i>Mentha piperita</i> | Anti-inflammatory; Expectorant |
| <i>Mentha spicata</i> | Anti-inflammatory; Headache; Expectorant; Fever; Throat inflammation; Cough |
| <i>Mikania glomerata</i> | Expectorant; Cough |
| <i>Morinda citrifolia</i> | Anti-inflammatory |
| <i>Ocimum canum</i> | Swelling reduction; Headache; Cough |
| <i>Persea Americana</i> | Anti-inflammatory |
| <i>Petiveria alliacea</i> | Anti-inflammatory |
| <i>Petroselinum crispum</i> | Anti-inflammatory |
| <i>Plantago major</i> | Anti-inflammatory; Throat inflammation; Cough |

| | | |
|--|------------------------------------|---|
| | <i>Psidium guajava</i> | Anti-inflammatory |
| | <i>Pterodon polygalaeflorus</i> | Anti-inflammatory; Throat inflammation |
| | <i>Punica granatum</i> | Throat inflammation |
| | <i>Rosmarinus officinalis</i> | Anti-inflammatory; hair growth; Improves memory |
| | <i>Ruta graveolens</i> | Anti-inflammatory; Headache |
| | <i>Saccharum officinarum</i> | Anti-inflammatory |
| | <i>Sambucus nigra</i> | Fever |
| | <i>Schinus terebinthifolius</i> | Anti-inflammatory |
| | <i>Senna macranthera</i> | Fever |
| | <i>Sideroxylon obtusifolium</i> | Anti-inflammatory |
| | <i>Solanum paniculatum</i> | Cough |
| | <i>Sterculia striata</i> | Swelling in the legs |
| | <i>Stryphnodendron polyphyllum</i> | Anti-inflammatory |
| | <i>Syzygium aromaticum</i> | Headache; Expectorant; Fever |
| | <i>Uncaria tomentosa</i> | Anti-inflammatory; Body aches |
| | <i>Vernonia polyanthes</i> | Expectorant; Cough |
| | <i>Zingiber officinale</i> | Anti-inflammatory; Throat inflammation; Hoarseness; Cough |
| | <i>Ziziphus joazeiro</i> | Swelling |
| Mental and behavior disorders (F00-F99) ICF = 0,81 | <i>Citrus sinensis</i> | Calming |
| | <i>Cymbopogon citratus</i> | Anxiety; Calming; Insomnia |
| | <i>Jatropha gossypifolia</i> | Psychiatric problems |
| | <i>Lippia alba</i> | Calming; Insomnia |
| | <i>Matricaria chamomilla</i> | Calming; Insomnia |
| | <i>Mentha spicata</i> | Calming |
| | <i>Ocimum canum</i> | Calming; Insomnia |
| | <i>Passiflora cincinnata</i> | Calming |
| | <i>Passiflora edulis</i> | Calming |
| | <i>Pimpinella anisum</i> | Calming |
| | <i>Psidium guajava</i> | Calming |
| | <i>Rosmarinus officinalis</i> | Calming |

265

266

267 **4. Discussion**

268

269 Analyzing the results of this research, it is possible to observe that the women were the
270 majority, corresponding to 89,7% of the interviewed. The herbal medicines as the medicinal
271 plants are therapeutic resources very used by the feminine population [24]. Others studies also
272 prove that the women make use of this treatment form, representing a larger portion that 50%
273 of the investigated individuals [25, 9].

274 When question the research participants about which diseases that they pursued using
275 the medicinal plants, most of the answers cited the symptoms. It is normal that results like this
276 occurs on ethnopharmacological researches, because the investigated population does not
277 have technical knowledge as the health professionals to specify a type of illness from the
278 symptoms. However, researching this traditional knowledge is important because allows it to
279 obtain information about biological phenomena through the systematic observation made by
280 people that even doesn't have access to the academic science, they are able to perceive the
281 therapeutic effects that the medicinal plants promotes to the human health [26]. This low
282 education level of the participants of an ethnopharmacological investigation agrees with the
283 results found in this research, because the most of the interviewed (56,4%) have only
284 incomplete primary education.

285 In this present study, it was observed that the most related occupations by the
286 participants was rural worker, which corroborates with the local that they reside and that
287 possibly have hard access to medical care and allopathic medicines. Furthermore, it was
288 demonstrated that the most of these people get the plant species at home. Therewith, there is
289 the probability that they have this natural product as medicinal resources faster and accessible.
290 The lack of access to quality medical care is also one of the factors that become this
291 alternative method an important ally in the ill treatment of needy people [27].

292 For presenting the highest RF in this study, by having the second highest value of RI
293 and being one of the plants used in the category of highest ICF, the *Lippia alba* was the main
294 specie investigated in scientific literature. A similar result was found in the RI value of this
295 research for *Lippia alba*, being one of the most important species for being indicated by the
296 interviewed as a form of treatment for a bigger number of diseases [28].

297 In a bibliographic survey it was found that the highest number of citations of species
298 in Verbenaceae family was regarded to *Lippia alba* [29]. Studies identified that this specie has

299 antimicrobial activity [30], what is related to therapeutic indications mentioned by the
300 interviewed that fall within the category of digestive tract diseases, as diarrhea and food
301 poisoning, which it can be caused by pathogenic microorganisms [31]. The calming effect was
302 one of the medicinal proprieties attributed to *Lippia alba*, this can be related to the sedative
303 and analgesic capacity of this plant [32]. The antiviral activity described suggests a relation to
304 the use of this specie in flight the flu, but additional studies of specific virus of its specie are
305 still necessary to confirm the action [33]. It was demonstrated that the *Lippia alba* presents
306 antioxidant activity [34], a pharmacological propriety involved in the improvement of the
307 immunologic system [35]. The direct use of the tea of this plant for the treatment of arterial
308 hypertension and cardiac problems has not yet been scientifically proven, as suggested by the
309 interviewed in this present study. However, when evaluating the essential oil of *Lippia alba* it
310 was concluded that it has the ability to produce a hypotensive effect, brachycardia,
311 vasorelaxation [36]. It was not found in the scientific literature pharmacological proprieties that
312 it is related the use of this specie in the arterial hypertension increase. It was proven in
313 preclinical experiments, the effectiveness of the oral use of *Lippia alba* in the prevention of
314 gastric ulcers [37].

315 In this research, the *Lippia alba* was presented in six categories of body systems
316 determined by the WHO, four of which had the highest values of ICF. As in this study, other
317 studies showed that the *Lippia alba* was one of the indicated plants to treat the illness that it
318 fits within the categories of respiratory diseases [38, 39, 40], mental and behavioral disorders [38,
319 40] circulatory system diseases [38, 39], digestive tract diseases [38]. Another survey of medicinal
320 plants used in popular medicine found similar results for this search, which the category of
321 mental and behavior disorders obtained the highest value of ICF [41].

322 In addition to *Lippia alba*, two other species obtained a high Responses Frequency.
323 The species *Cymbopogon citratus*, popularly known as Capim-Santo, was the plant with the

324 second highest Responses Frequency, with RF = 72 (7,9%). In addition, it had the seventh
325 highest value of Relative Importance, with RI = 1,43. The therapeutic indications given by the
326 interviewees for this plant were: anxiety, anti-inflammatory, calming, colic, headache,
327 shortness of breath, fever, flatulence, flu, arterial hypertension, insomnia, common cold and
328 cough. It was shown experimentally that *Cymbopogon citratus* tea did not have an anxiolytic
329 effect, and it was also not possible to treat the feverish state of the animals tested using the tea
330 as a method of preparation [42]. However, in another study, the essential oil of this species
331 showed anxiolytic and sedative activity [43]. The anti-inflammatory effect of infusing the
332 leaves of Capim-santo was demonstrated experimentally, because it was able to reduce the
333 production of molecules that cause inflammation [44]. The hydroethanolic extract of
334 *Cymbopogon citratus* did not show antiviral activity on *Human mastadenovirus* serotype 5,
335 which is responsible for causing diseases that belong to the Respiratory System Diseases
336 category [45], furthermore, no studies were found in the literature the use of tea or infusion of
337 this plant against influenza and cold viruses. The antihypertensive capacity was observed
338 when the hydroalcoholic extract of *Cymbopogon citratus* was used [46].

339 *Mentha spicata*, popularly known as Hortelã, obtained the third highest Responses
340 Frequency, with RF = 52 (5,7%) and the sixth highest value of Relative Importance, RI =
341 1,49. The popular indications obtained in this research for this plant were: abortive, anti-
342 inflammatory, calming, headache, expectorant, fever, gastritis, flu, throat inflammation,
343 indigestion, stomach problems, common cold, cough and worm. In another study, using
344 *Mentha spicata* methanol extract, it was possible to prove the analgesic, anti-inflammatory
345 and antipyretic capacity [47]. No experiments have been found to evaluate the use of tea or
346 extract of this plant in the treatment of indications related to diseases of the digestive system,
347 but it has been shown that the essential oil of *Mentha spicata* is capable of reducing the
348 symptoms of functional dyspepsia, a condition that causes problems gastric [48], and can act as

349 an antibacterial agent against food-borne pathogenic bacteria [49]. The aqueous extract of
350 *Mentha spicata* exhibited nematicidal activity [50], which suggests a relationship with the
351 indication of this plant for the treatment of worm. In addition, using this same method of
352 preparation, this species induced a sedative response and anxiolytic activity [51], which is
353 related to the calming effect indicated by the interviewees. No research was found to test the
354 tea or extract of *Mentha spicata* to treat the flu or cold, but essential oil showed antiviral
355 activity because it was able to inhibit *parainfluenza virus* type 3 [52], which are viruses
356 respiratory as well as those of the flu and the common cold [53]. Studies that evaluated the
357 abortive effect of Hortelã tea, were not found in the scientific literature. Inhaling the essential
358 oil of *Mentha spicata* was able to improve lung status and respiratory function [54], which may
359 be related to the indication for cough and expectorant action indicated by the interviewees, but
360 studies are still needed to test the oral and inhaled use of the tea or extract of this plant. The
361 essential oil of *Mentha spicata* also demonstrated antimicrobial, antioxidant and anticancer
362 activity [55].

363

364 5. Conclusion

365

366 Thus, through this study it was possible to obtain statistically relevant information
367 about the use of the medicinal plants by population of Travessão de Minas - MG.
368 Furthermore, it was possible to prove in the scientific literature some popular use indicated of
369 *Lippia alba*, *Cymbopogon citratus* and *Mentha spicata*. Therefore, the traditional use about
370 the therapeutic use of plant species are important, as long as it is necessary that the use be
371 correct and safe through the pharmacological studies and natural product chemistry studies.
372 Finally, considering the results found, the medicinal plants and indicated uses by this

373 community, it can provide search sources for future studies in the prospection of new
374 bioactive molecules.

375

376 **Appendix I**

377

Questionnaire

378 No. of interviewer: _____ Date: ___/___/_____ Sex: Fem () Male ()

379 **1** – How old are you? _____ years old

380 **2** – Did you study?

381 () YES: Tick below the schooling clarified () NO

382 Schooling: 1st degree () Complete () Incomplete

383 2nd degree: () Complete () Incomplete

384 Higher degree: () Complete () Incomplete

385

386 **3** – What is your current occupation? _____

387 **4** – Do you use medicinal plants to treat any disease?

388 () NO: Finalize the questionnaire.

389

390 () YES: Answer the next questions. Specify which disease:

391 _____

392 _____

393

394 **5** – Popular name of the medicinal planto or drug: _____

395 **6** – Is this plant known by another name?

396 NO () YES (). If so, which ones?

397 _____

398

399 **7** – What is it for? _____

400

401

402 **8** – Which part of the plant is used?

403 () Leaves

404 () Fruits

405 () Bark

406 () Root
407 () Other, specify:

408 **9** – How do you prepare?

409

410 () Tea
411 () Bottle
412 () Pure
413 () Others.

414 Which? _____

415

416

417 **10** – How is it taken? (Times a day, week, month, and so on)

418 _____

419

420

421

422 **11** – Where do you get the plant? _____

423

424

425 **12** – At what time of the year is it harvested?

426 _____

427

428 **13** – Have you ever felt any discomfort or health problems after using these medicinal plants?

429

430 () YES: report below () NO

431

432 Which? _____

433

434

435 **Acknowledgement**

436

437 Authors are thankful to local community members for participation in this study and
438 sharing their knowledge. Authors thank the Conselho Nacional de Desenvolvimento
439 Científico e Tecnológico (CNPq) for funding this work through a scientific initiation
440 scholarship.

441

442

443 **References**

444

445 [1] Lumlerdkij N, Boonrak R, Booranasubkajorn S, Akarasereenont P, Heinrich M. In vitro
446 protective effects of plants frequently used traditionally in cancer prevention in Thai
447 traditional medicine: An ethnopharmacological study. *Journal of Ethnopharmacology*
448 2019. <https://doi.org/10.1016/j.jep.2019.112409>

449 [2] Roos VC, Carvalho CF, Coutinho C, Silva LL, Gindri AL. Ethnopharmacological study
450 of medicinal plants and their possible drug interactions in two cities of the South of
451 Brazil. *Brazilian Journal of health Review* 2019; 2 (5): 4129-4144.

452 [3] Younessi-Hamzekhanlu M, Ozturk M, Altay V, Nojadeh MS, Alakbarli F.
453 Ethnopharmacological study of medicinal plants from Khoy city of West Azerbaijan-
454 Iran. *Indian Journal of Traditional Knowledge* 2020; 19 (2): 1-17.

455 [4] Rosalia N, Susandarini R. Medicinal plants diversity in Bukit Rimbang Bukit Baling
456 wildlife reserve, Riau, Indonesia. *International Journal of Herbal Medicine* 2020; 8(4):
457 33-38.

458 [5] Brasil. Política Nacional de Plantas Medicinais e Fitoterápicos. Edn 1. Ministério da
459 Saúde, Brasília, 2006.

460 [6] Fagundes NCA, Oliveira GL, Souza BG. Etnobotânica de plantas medicinais utilizadas no
461 distrito de Vista Alegre, Claro dos Poções – Minas Gerais. *Revista Fitos* 2017; 11(1): 1-
462 118.

463 [7] Otoni TCO. Levantamento Etnobotânico de Plantas Utilizadas com Fins Medicinais e
464 Cosméticos em Comunidades Tradicionais e do Município de Araçuaí, Minas Gerais.
465 Dissertação (Mestrado) – Universidade Federal dos Vales do Jequitinhonha e Mucuri,
466 Diamantina, 2018.

- 467 [8] Fernandes BF, Gonçalves HR, Guimarães MR, Alves AA, Bieski IGC. Estudo
468 etnofarmacológico das plantas medicinais com presença de saponinas e sua importância
469 medicinal. *Revista da Saúde da AJES* 2019; 5 (9): 16-22.
- 470 [9] Pio IDSL, Lavor AL, Damasceno CMD, Menezes PMN, Silva FS, Maia GLA. Traditional
471 knowledge and uses of medicinal plants by the inhabitants of the islands of the São
472 Francisco river, Brazil and preliminary analysis of *Rhaphiodon echinus* (Lamiaceae).
473 *Braz. J. Biol.* 2019; 79 (1): 87-99.
- 474 [10] Lima WP, Gomes Filho AS, Ifadireó MM, Bitu VCN. Ethnopharmacological Study In
475 Faith Healers Of Colina Do Horto, In Juazeiro Do Norte-Ce, Brazil. *Científic@*
476 *Multidisciplinary Journal* 2019; 6 (1): 68 – 86.
- 477 [11] World Health Organization – WHO. WHO Traditional Medicine Strategy: 2014-2023.
478 Hong Kong SAR, World Health Organization, 2013.
- 479 [12] Martins AP, Salgueiro LR, Cunha AP, Vila R, Cañigüeral S, Tomi F et al. Chemical
480 Composition of the Bark Oil of *Cedrela odorata* from S. Tome and Principe. *Journal of*
481 *Essential Oil Research* 2003; 15 (6): 422-424.
- 482 [13] Alves JJP, Lima CC, Santos DB, Bezerra PDF. Conhecimento Popular Sobre Plantas
483 Medicinais e o Cuidado da Saúde Primária: Um Estudo de Caso da Comunidade Rural de
484 Mendes, São José de Mipibu/Rn. *Carpe Diem: Revista Cultural e Científica do*
485 *UNIFACEX* 2015; 13 (1): 136-156.
- 486 [14] Di Stasi, LC. An integrated approach to identification and conservation of medicinal
487 plants in the tropical forest—a brazilian experience. *Plant Genetic Resources* 2007; 3 (2):
488 199-205.
- 489 [15] Maroni BC, Di Stasi LC, Machado SR. *Plantas medicinais do cerrado de Botucatu*. Edn
490 1, Editora UNESP, São Paulo, 2006.

- 491 [16] Saunders M, Lewis P, Thornhill A. Selecting samples. In: Saunders M, Lewis P,
492 Thornhill A. (eds.) *Research Methods for Business Students*. Pearson Education, 2009,
493 210 – 255.
- 494 [17] Santos C. *Estatística descritiva: manual de auto-aprendizagem*. Edições Sílabo, Lisboa,
495 2007.
- 496 [18] Linhares JFP, Hortegal EV, Rodrigues IA, Silva PSS. Etnobotânica das principais plantas
497 medicinais comercializadas em feiras e mercados de São Luís, Estado do Maranhão,
498 Brasil. *RevPan-AmazSaude* 2014; 5 (3): 39-46.
- 499 [19] Bennett BC, Prance GT. Introduced plants in the indigenous pharmacopoeia of Northern
500 South America. *Economic Botany* 2000; 54: 90 -102.
- 501 [20] Souza RKD, Silva MAP, Menezes IRA, Ribeiro DA, Bezerra LR, Souza MMA.
502 Ethnopharmacology of medicinal plants of carrasco, northeastern Brazil. *Journal of*
503 *Ethnopharmacology* 2014; 157: 99 –104.
- 504 [21] Rodrigues AP, Andrade LHC. Levantamento etnobotânico das plantas medicinais
505 utilizadas pela comunidade de Inhamã, Pernambuco, Nordeste do Brasil. *Revista*
506 *Brasileira de Plantas Mediciniais* 2014; 16 (3): 721-730.
- 507 [22] World Health Organization – WHO. International Statistical Classification of Diseases
508 and Related Health Problems. <https://icd.who.int/browse10/2019/en#/X>. 2019. Accessed
509 12 May, 2020.
- 510 [23] Trotter R, Logan M. Informant Consensus: A New Approach for Identifying Potentially
511 Effective Medicinal Plants. In: Etkin NL. (ed.) *Indigenous Medicine and Diet:*
512 *Biobehavioural Approaches*. Redgrave, Nova York, 1986, 91-111.
- 513 [24] Oliveira, APC. O conhecimento tradicional sobre plantas medicinais no âmbito da saúde
514 da mulher: uma perspectiva no contexto do produto tradicional fitoterápico. *Revista Fitos*
515 2016; 10 (4): 28 – 31.

- 516 [25] Penido AB, Morais SM, Ribeiro AB, Silva AZ. Ethnobotanical study of medicinal plants
517 in Imperatriz, State of Maranhão, Northeastern Brazil. *Acta Amazonica* 2016; 46 (4): 345
518 – 354.
- 519 [26] Elisabetsky E. Etnofarmacologia. *Ciência e Cultura* 2003; 55 (3): 35-36.
- 520 [27] Stalcup, MM. Plantas de uso medicinal ou ritual numa feira livre no Rio de Janeiro,
521 Brasil. Dissertação (Mestrado) - Universidade Federal do Rio de Janeiro, Rio de Janeiro,
522 2000.
- 523 [28] Brito MR, Senna-Valle L. Plantas medicinais utilizadas na comunidade caiçara da Praia
524 do Sono, Paraty, Rio de Janeiro, Brasil. *Acta Botanica Brasilica* 2011; 25 (2): 363-372.
- 525 [29] Santos ACB, Nunes TS, Coutinho TS, Silva MAP. Uso popular de espécies medicinais
526 da família Verbenaceae no Brasil. *Revista Brasileira de Plantas Mediciniais* 2015; 17 (4):
527 980-991.
- 528 [30] Aguiar JS, Costa MCCD, Nascimento SC, Sena. KXFR. Atividade antimicrobiana de
529 *Lippia alba* (Mill.) N. E. Brown (Verbenaceae). *Revista Brasileira de Farmacognosia*
530 2008; 18 (3): 436-440.
- 531 [31] Brasil. Manual integrado de vigilância, prevenção e controle de doenças transmitidas por
532 alimentos. Editora do Ministério da Saúde, Brasília, 2010.
- 533 [32] Tôrres AR, Oliveira RAG, Diniz MFFM, Araújo EC. Estudo sobre o uso de plantas
534 medicinais em crianças hospitalizadas da cidade de João Pessoa: riscos e benefícios.
535 *Revista Brasileira de Farmacognosia* 2005; 15 (4): 373-380.
- 536 [33] Andrighetti-Frohner CR, Sincero TCM, Silva AC, Savi LA, Gaido CM, Bettega JMR et
537 al. Antiviral evaluation of plants from Brazilian Atlantic Tropical Forest. *Fitoterapia*
538 2005; 76 (3-4): 374–378.
- 539 [34] Stashenko EE, Jaramillo BE, Martínez JR. Comparison of different extraction methods
540 for the analysis of volatile secondary metabolites of *Lippia alba* (Mill.) N.E. Brown,

- 541 grown in Colombia, and evaluation of its in vitro antioxidant activity. *Journal of*
542 *Chromatography* 2004; 1025 (1): 93–103.
- 543 [35] Bordignon R. Efeito Nutracêutico de Minerais e Vitaminas Sobre Desempenho,
544 Atividade Antioxidante e Resposta Imune em Período de Transição de Dieta
545 (Desaleitamento) de Bezerras. Dissertação (Mestrado) - Universidade do Estado de Santa
546 Catarina, Chapecó, 2019.
- 547 [36] Maynard LG. Efeitos Cardiovasculares do Óleo Essencial de *Lippia alba* (Mill.) N.E.
548 Brown. (Erva Cidreira Brasileira) em Ratos. Dissertação (Mestrado) - Universidade
549 Federal de Sergipe, São Cristóvão, 2011.
- 550 [37] Pascual ME, Slowing K, Carretero ME, Villar Á. Antiulcerogenic activity of *Lippia alba*
551 (Mill.) N. E. Brow (Verbenaceae). *Il Farmaco* 2001; 56 (5-7): 501–504.
- 552 [38] Ribeiro DA, Macêdo DG, Oliveira LGS, Saraiva ME, Oliveira SF, Souza MMA et al.
553 Potencial terapêutico e uso de plantas medicinais em uma área de Caatinga no estado do
554 Ceará, nordeste do Brasil. *Revista Brasileira de Plantas Mediciniais* 2014; 16 (4): 912-
555 930.
- 556 [39] Araujo JL, Lemos JR. Estudo etnobotânico sobre plantas medicinais na comunidade de
557 Curral Velho, Luís Correia, Piauí, Brasil. *Biotemas* 2015; 28 (2): 125-136.
- 558 [40] Albergaria ET, Silva MV, Silva AG (*in memoriam*). Levantamento etnobotânico de
559 plantas medicinais em comunidades rurais localizadas na Unidade de Conservação Tatu-
560 Bola, município de Lagoa Grande, PE – Brasil. *Revista Fitos* 2019; 13 (2): 137-154.
- 561 [41] Silva BKF, Cardoso RN, Silva RM, Santos JNS, Laurindo SS. Levantamento das plantas
562 medicinais comercializadas na feira livre do município de Almenara, baixo
563 Jequitinhonha, Minas Gerais. *Cadernos de Agroecologia* 13. [http://cadernos.aba-](http://cadernos.aba-agroecologia.org.br/index.php/cadernos/issue/view/1)
564 [agroecologia.org.br/index.php/cadernos/issue/view/1](http://cadernos.aba-agroecologia.org.br/index.php/cadernos/issue/view/1). 2018. Accessed 30 June 2020.

- 565 [42] Carlini EA, Contar JDP, Silva-Filho AR, Silveira-Filho NG, Frochtengarten ML, Bueno
566 OFA. Pharmacology of lemongrass (*Cymbopogon citratus* Stapf). I. Effects of teas
567 prepared from the leaves on laboratory animals*. J Ethnopharmacol 1986; 17 (1): 37-64.
- 568 [43] Costa CARA. “Estudo da ação ansiolítica e sedativa de preparações obtidas de
569 *Cymbopogon citratus* (D.C.) Stapf.”Dissertação (Mestrado) – Universidade Estadual
570 Paulista, Botucatu, 2007.
- 571 [44] Figueirinha A, Cruz MT, Francisco V, Lopes MC, Batista MT. Anti-inflammatory
572 activity of *Cymbopogon citratus* leaf infusion in lipopolysaccharide-stimulated dendritic
573 cells: contribution of the polyphenols. J Med Food. 2010;13 (3): 681-90.
- 574 [45] Chiamenti L, Silva FP, Schalleberger K, Demoliner M, Rigotto C, Fleck JD.
575 Cytotoxicity and antiviral activity evaluation of *Cymbopogon spp* hydroethanolic
576 extracts. Braz. J. Pharm. Sci. 2019; 55: 1-9.
- 577 [46] Singi G, Damasceno DD, D’Andréa ED, Silva GA. Efeitos agudos dos extratos
578 hidroalcoólicos do alho (*Allium sativum* L.) e do capim-limão (*Cymbopogon citratus*
579 (DC) Stapf) sobre a pressão arterial média de ratos anestesiados. Rev. Bras. Farmacogn.
580 2005; 15(2): 94-97.
- 581 [47] Yousuf PMdH, Noba NY, Shohel M, Bhattacharjee R, Das BK. Analgesic, Anti-
582 Inflammatory and Antipyretic Effect of *Mentha spicata* (Spearmint). British Journal of
583 Pharmaceutical Research 2013; 3(4): 854-864.
- 584 [48] Sastry JLN, Pandey SD, Vats A, Vedula S, Kumar S. Symptomatic management of
585 functional dyspepsia: Evaluation of efficacy and safety of Pudim Hara Pearls and Pudim
586 Hara Liquid. Int. J. Res. Ayurveda Pharm. 2016; 7 (3): 65-69.
- 587 [49] Shahbazi Y. Chemical Composition and In Vitro Antibacterial Activity of *Mentha*
588 *spicata* Essential Oil against Common Food-Borne Pathogenic Bacteria. J Pathog. 2015;
589 2015 (916305): 1-5.

- 590 [50] Caboni P, Saba M, Tocco G, Casu L, Murgia A, Maxia A et al. Nematicidal Activity of
591 Mint Aqueous Extracts against the Root-Knot Nematode *Meloidogyne incognita*. J.
592 Agric. Food Chem. 2013; 61 (41): 9784–9788.
- 593 [51] Caro DC, Rivera DE, Ocampo Y, Franco LA, Salas RD. Pharmacological Evaluation of
594 *Mentha spicata* L. and *Plantago major* L., Medicinal Plants Used to Treat Anxiety and
595 Insomnia in Colombian Caribbean Coast. Evidence-Based Complementary and
596 Alternative Medicine 2018; 2018 (5921514): 1-7.
- 597 [52] Erdoğan Orhan İ, Özçelik B, Kartal M, Kan Y. Antimicrobial and antiviral effects of
598 essential oils from selected Umbelliferae and Labiatae plants and individual essential oil
599 components. Turk J Biol 2012; 36 (3): 239-246.
- 600 [53] Schons AM, Tobin KF, Andrade VRM. Resfriado comum: estudo utilizando como
601 instrumento a interdisciplinaridade. Revista Interdisciplinar em Ciências da Saúde e
602 Biológicas 2019; 3(1)55-66.
- 603 [54] Jaradat NA, Zabadi HA, Rahhal B, Hussein AMA, Mahmoud JS, Mansour B et al. The
604 effect of inhalation of *Citrus sinensis* flowers and *Mentha spicata* leave essential oils on
605 lung function and exercise performance: a quasi-experimental uncontrolled before-and-
606 after study. J Int Soc Sports Nutr 2016; 13 (36): 1-8.
- 607 [55] Bardaweel SK, Bakchiche B, ALSalamat HA, Rezzoug M, Gherib A, Flamini G.
608 Chemical composition, antioxidant, antimicrobial and Antiproliferative activities of
609 essential oil of *Mentha spicata* L. (Lamiaceae) from Algerian Saharan atlas. BMC
610 Complement Altern Med. 2018; 18 (201): 1-7.
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619 results and experimental procedure which should be given in the required details for others to
620 verify the work. The manuscript should be prepared in English using "MS Word". "Times
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622 one inch (2.5 cm) at the top, bottom and the sides and, all pages numbered starting from the
623 title page. Lines should be numbered in the margins with a continuous numbering from the
624 start of the manuscript.

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626 The font size should be of 12pt, but main headings may be of 14pt and subheadings 12 but
627 bold. All research articles should have the following sections: Title page, Abstract, Key
628 words, Introduction, Materials and methods, Results, Discussion, Conclusion,
629 Acknowledgement (if any) and References. The sections in the text should be subdivided as 1,
630 1.1, 2, 2.1, 2.1.2 likewise. The Author may provide at least three potential reviewers of same
631 research field (optional), not from the host institute with their full addresses e-mail id and
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637 address(es) in normal face lower case. An asterisk (*) must be placed after the corresponding
638 author's name as superscript whose email id, fax, telephone number can be given.

639 Corresponding author has the responsibility to ensure that all co-authors are aware and
640 approve the contents of the submitted manuscript.

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642 Abstract: This section should detail the problems, experimental approach, major findings and
643 conclusion in one paragraph and should appear on the second page. Avoid abbreviation,
644 diagram and references in the abstract. It should be single - spaced and should not exceed 150
645 words for full papers.

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647 Keywords: Author(s) must give about 4-6 key words which can identify the most important
648 subjects covered by the paper. They must be placed at the end of the abstract.

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650 Introduction: The manuscript should include a brief introduction stating the purpose of the
651 investigation and relating the manuscript to similar previous research. Only information
652 essential to the arguments should be presented.

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657 adapted, and modified tables and provide a credit line in the footnote.

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660 may be separate or combined based on the author's requirement. Tables and figures should be
661 designed to maximize the comprehension of the experimental data. The interpreted results
662 should be explained clearly in discussions and should relate them to the existing knowledge in
663 the field as clearly as possible. Tables, Graphs and figures (Illustrations) should be inserted

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666 figures MUST be in the text form and should not form part of the image. Color photographs
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672 Conclusion: The author should conclude his/her finding accordingly.

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688 Standard journal article: (If more than six authors, the first six shall be listed followed by et
689 al.)

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691 Panda BB, Gaur K, Kori ML, Tyagi LK, Nema RK, Sharma CS et al. Anti-Inflammatory and
692 analgesic activity of *Jatropha gossypifolia* in experimental animal models. *Global Journal of*
693 *Pharmacology* 2015; 3(1):1-5.

694

695 For Books and other monograph Format: Author AB, Author BB, Author CC. Title of Book.
696 Ed, Vol, Publisher, City, year, page numbers.

697 Nadkarni KM. *Indian Materia Medica*. Edn 3, Vol. I, Popular Prakashan, Mumbai, 2015, 242-
698 246.

699

700 For Patent Reference: H. Aviv, D. Friedman, A. Bar-Ilan and M. Vered. Submicron emulsions
701 as ocular drug delivery vehicles, U.S. Patent US 5496811; 1996.

702

703 For Website Reference: Quick dissolving tablets. <http://www.biospace.com>. 27 May, 2015.

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707 accordance with "Principles of Laboratory Animal Care". The Method section of the
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709 informed consent was obtained.

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Sample paper

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Abstract: (Times New Roman, 10, Bold) The abstract should summarize the content of the paper. Try to keep the abstract below 150 words. Do not have references or displayed equations in the abstract. It is imperative that the margins and style described below be adhered to carefully. This will enable us to maintain uniformity in the final printed copies of the Journal. Papers not made according these guidelines will not be published although its content has been accepted for publication. Paper form is a necessary condition for its publication, as well as its content.

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755 **1. Introduction: (Times New Roman, 12, Bold)**

756 The text must be in English. Authors whose English language is not their own are certainly
 757 requested to have their manuscripts checked (or co-authored) by an English native speaker,
 758 for linguistic correctness before submission and in its final version, if changes had been made
 759 to the initial version. The submitted typeset scripts of each contribution must be in their final
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 762 point Times New Roman. If absolutely necessary, we suggest the use of condensed line
 763 spacing rather than smaller point sizes. Some technical formatting software print
 764 mathematical formulas in italic type, with subscripts and superscripts in a slightly smaller font
 765 size. This is acceptable.

766 References should be like this ^[1, 2, 3].

767 **2. Materials and methods (Times New Roman, 12, Bold)**

768 Major headings are to be column centered in a bold font without underline. They need be
 769 numbered. "2. Headings and Footnotes" at the top of this paragraph is a major heading.

770 **2.1 Subheadings (Times New Roman, 12, Bold)**

771 Subheadings should be as the above heading "2.1 Subheadings". They should start at the left-
 772 hand margin on a separate line.

773 The top of this paragraph illustrates a sub-subheading.
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775 **2.2 Footnotes (Times New Roman, 12, Bold)**

776 Footnotes should be typed in singled-line spacing at the bottom of the page and column where
 777 it is cited. Footnotes should be rare.

778 **3. Results & Discussion (Times New Roman, 12, Bold)**

779 Results should be the major findings of your experiment. You have to compare the results with
 780 previous studies done in same.

781 **3.1 Tables and Figures**

782 To insert "Tables" or "Figures", please paste the data as stated below. All tables and figures
 783 must be given sequential numbers (1, 2, 3, etc.) and have a caption placed below the figure
 784 ("FigCaption") or above the table ("Fig.Talbe.1, 2 ") being described, using 8pt font and
 785 please make use of the specified style "caption" from the drop-down menu of style categories

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Table 1: Margin specifications

| <i>Margin</i> | <i>A4 Paper</i> | <i>US Letter Paper</i> |
|---------------|-----------------|------------------------|
| Left | 18.5 mm | 14.5 mm (0.58 in) |
| Right | 18mm | 13 mm (0.51 in) |

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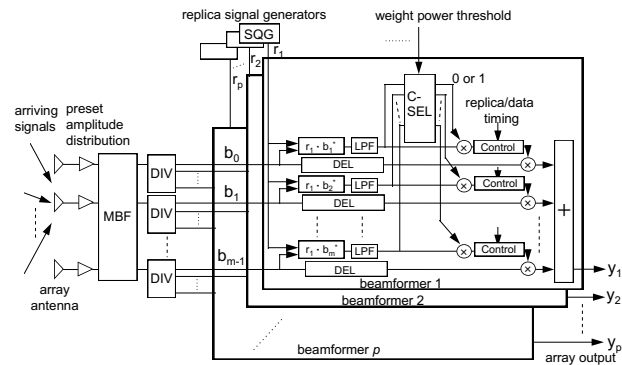


Fig. 1 Proposed beam former.

3.2 Equations (Times New Roman, 12, Bold)

They should be numbered consecutively throughout the text. Equation numbers should be enclosed in parentheses and flushed right. Equations should be referred to as Eq. (X) in the text where X is the equation number. In multiple-line equations, the number should be given on the last line.

$$y_i(N) = \sum_{n=0}^{m-1} w_n(N) b_n(N)$$

$$= \sum_{n=0}^{m-1} b_n^*(N) r_i(N) \cdot b_n(N) \quad (1)$$

4. Conclusions (Times New Roman, 12, Bold)

Here conclude your finding to with object of your studies.

Appendix

Appendixes, if needed, appear before the acknowledgment.

Acknowledgments (If any, Times New Roman, 12, Bold)

Insert acknowledgment, if any. The preferred spelling of the word “acknowledgment” in American English is without an “e” after the “g.” Use the singular heading even if you have many acknowledgments. Avoid expressions such as “One of us (S.B.A.) would like to thank” Instead, write “F. A. Author thanks” Sponsor and financial support acknowledgments are also placed here.

References (Times New Roman, 12, Bold)

- 1 Strachey R. Catalogue of the Plants of Kumaon and of the Adjacent Portions of Garhwal and Tibet, Periodical Experts, New Delhi, India, 1852, 92.
2. Polunin O, Stainton A. Flowers of the Himalaya. Oxford University Press, New

816 Delhi, India, 1984,192. **(For Books)**

817 3. Mahmood U, Kaul VK, Acharya R, Jerovetz L. *p*-Coumaric acid esters from

818 *Tanacetum longifolium*. *Phytochemistry*, 2003; 64(4): 851-853. **(For Article)**

819 **For Patent Reference:** H. Aviv, D. Friedman, A. Bar-Ilan and M. Vered. Submicron
820 emulsions as ocular drug delivery vehicles, U.S. Patent US 5496811; 1996.

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822 **For Website Reference:** Quick dissolving tablets. <http://www.biospace.com>. 27 may, 2001.

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APÊNDICE

APÊNDICE I: PARECER CONSUBSTANCIADO DO CEP



PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: ESTUDO ETNOFARMACOLÓGICO DE PLANTAS MEDICINAIS UTILIZADAS PELA POPULAÇÃO NO DISTRITO DE TRAVESSÃO DE MINAS, MINAS GERAIS

Pesquisador: Enyara Rezende Moraes

Área Temática:

Versão: 1

CAAE: 12114019.3.0000.5152

Instituição Proponente: Instituto de Genética e Bioquímica

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 3.289.572

Apresentação do Projeto:

Conforme apresenta o protocolo:

O estudo tem como objetivo conhecer as espécies de plantas mais utilizadas popularmente no distrito de Travessão de Minas, município de São Francisco/MG, e verificar se há comprovação científica da eficácia terapêutica indicada pela comunidade. Para tal, os pesquisadores entrevistarão usuários da água do poço artesiano do local, já que são cadastrados e os dados são de acesso público. Na entrevista, serão abordados questionamentos sobre plantas utilizadas para fins medicinais, seu preparo, forma de consumo e efeitos nos usuários.

Objetivo da Pesquisa:

OBJETIVO GERAL

Conhecer as espécies de plantas mais utilizadas popularmente no distrito de Travessão de Minas no município de São Francisco-MG verificando se há comprovação científica da eficácia terapêutica indicada pela comunidade.

OBJETIVOS ESPECÍFICOS

Identificar as plantas medicinais mais utilizadas pela Comunidade de Travessão de Minas-MG; suas indicações terapêuticas tradicionais e formas de uso popular;

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Continuação do Parecer: 3.289.572

Verificar na literatura científica trabalhos que comprovem eficácia terapêutica para o uso indicado pela comunidade, através de uma abordagem multidisciplinar envolvendo aspectos etnofarmacológicos e químicos;

Encontrar plantas que tenham seu uso terapêutico indicado pela comunidade do Travessão de Minas e que não possuem, ou possuem apenas em parte, os aspectos etnofarmacológicos e químicos descritos anteriormente na literatura científica.

Avaliação dos Riscos e Benefícios:

Segundo os pesquisadores:

RISCOS

Por se tratar de um estudo que envolve a investigação com seres humanos, é preciso estar de acordo com as normas preconizadas pela Comissão Nacional de Ética em Pesquisas com Seres Humanos, cumprindo a Resolução 466/12/Conselho Nacional de Saúde e promovendo uma pesquisa que mantenha o sigilo ético. Contudo, há riscos nesse trabalho que já estão vinculados a esse tipo de pesquisa, uma vez que pode ocorrer do entrevistado se sentir constrangido frente ao entrevistador. Além disso, outros fatores como o desgaste e o risco de identificação dos participantes no projeto podem ser acarretados pela entrevista. No entanto, para minimizar esses riscos será realizado um treinamento anteriormente a entrevista que ajudará a agilizar o processo de questionamento para evitar que o participante se canse e para que não haja a identificação destes e nem de terceiros. O questionário não será identificado pelo nome para que seja mantido o anonimato, apenas será enumerado.

BENEFÍCIOS

Os benefícios esperados com o desenvolvimento do presente estudo constituem uma importante contribuição ao conhecimento a respeito do uso de plantas medicinais como alternativa terapêutica no tratamento de diferentes doenças. Além disso, a partir de confrontação com a literatura científica, descobrir se o uso popular está comprovado cientificamente. Portanto, o presente estudo abre a perspectiva de descoberta de novas espécies a serem estudadas futuramente no sentido de desenvolver novos fármacos.

Comentários e Considerações sobre a Pesquisa:

Trata-se de em estudo descritivo, a ser realizado no distrito de Travessão de Minas no município de São Francisco - Minas Gerais.

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Continuação do Parecer: 3.289.572

Considerações sobre os Termos de apresentação obrigatória:

Todos os termos devidamente apresentados.

Conclusões ou Pendências e Lista de Inadequações:

Não foram observados óbices éticos.

De acordo com as atribuições definidas na Resolução CNS 466/12, o CEP manifesta-se pela aprovação do protocolo de pesquisa proposto.

O protocolo não apresenta problemas de ética nas condutas de pesquisa com seres humanos, nos limites da redação e da metodologia apresentadas.

Considerações Finais a critério do CEP:

Data para entrega de Relatório Final ao CEP/UFU: Abril de 2020.

OBS.: O CEP/UFU LEMBRA QUE QUALQUER MUDANÇA NO PROTOCOLO DEVE SER INFORMADA IMEDIATAMENTE AO CEP PARA FINS DE ANÁLISE E APROVAÇÃO DA MESMA.

O CEP/UFU lembra que:

- a- segundo a Resolução 466/12, o pesquisador deverá arquivar por 5 anos o relatório da pesquisa e os Termos de Consentimento Livre e Esclarecido, assinados pelo sujeito de pesquisa.
- b- poderá, por escolha aleatória, visitar o pesquisador para conferência do relatório e documentação pertinente ao projeto.
- c- a aprovação do protocolo de pesquisa pelo CEP/UFU dá-se em decorrência do atendimento a Resolução CNS 466/12, não implicando na qualidade científica do mesmo.

Orientações ao pesquisador :

- O sujeito da pesquisa tem a liberdade de recusar-se a participar ou de retirar seu consentimento em qualquer fase da pesquisa, sem penalização alguma e sem prejuízo ao seu cuidado (Res. CNS 466/12) e deve receber uma via original do Termo de Consentimento Livre e Esclarecido, na íntegra, por ele assinado.
- O pesquisador deve desenvolver a pesquisa conforme delineada no protocolo aprovado e descontinuar o estudo somente após análise das razões da descontinuidade pelo CEP que o

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Continuação do Parecer: 3.289.572

aprovou (Res. CNS 466/12), aguardando seu parecer, exceto quando perceber risco ou dano não previsto ao sujeito participante ou quando constatar a superioridade de regime oferecido a um dos grupos da pesquisa que requeiram ação imediata.

- O CEP deve ser informado de todos os efeitos adversos ou fatos relevantes que alterem o curso normal do estudo (Res. CNS 466/12). É papel de o pesquisador assegurar medidas imediatas adequadas frente a evento adverso grave ocorrido (mesmo que tenha sido em outro centro) e enviar notificação ao CEP e à Agência Nacional de Vigilância Sanitária – ANVISA – junto com seu posicionamento.
- Eventuais modificações ou emendas ao protocolo devem ser apresentadas ao CEP de forma clara e sucinta, identificando a parte do protocolo a ser modificada e suas justificativas. Em caso de projetos do Grupo I ou II apresentados anteriormente à ANVISA, o pesquisador ou patrocinador deve enviá-las também à mesma, junto com o parecer aprobatório do CEP, para serem juntadas ao protocolo inicial (Res.251/97, item III.2.e).

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

| Tipo Documento | Arquivo | Postagem | Autor | Situação |
|---|---|------------------------|--------------------------|----------|
| Informações Básicas do Projeto | PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1318974.pdf | 16/04/2019 15:39:34 | | Aceito |
| Folha de Rosto | Folha_rostoassinada_todos.pdf | 16/04/2019 14:27:47 | Enyara Rezende Morais | Aceito |
| Outros | Questionario.pdf | 09/04/2019 08:20:45 | Enyara Rezende Morais | Aceito |
| TCLE / Termos de Assentimento / Justificativa de Ausência | TCLE.pdf | 09/04/2019 08:20:32 | Enyara Rezende Morais | Aceito |
| Projeto Detalhado / Brochura Investigador | Projeto_CEP.pdf | 09/04/2019 08:20:20 | Enyara Rezende Morais | Aceito |
| Outros | Link_Curriculo_Lattes.pdf | 23/03/2019 11:57:42 | Enyara Rezende Morais | Aceito |
| Declaração de Instituição e Infraestrutura | DECLARACAO_COPARTICIPANTE.pdf | 23/03/2019 11:55:58 | Enyara Rezende Morais | Aceito |
| Declaração de Pesquisadores | Termo_Equipe_executora.pdf | 23/03/2019 11:49:58 | Enyara Rezende Morais | Aceito |

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Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

UBERLANDIA, 26 de Abril de 2019

Assinado por:
Karine Rezende de Oliveira
(Coordenador(a))

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