

ETHNOBIOLOGICAL SURVEY OF PLANTS AND ANIMALS USED FOR THE TREATMENT OF ACUTE RESPIRATORY INFECTIONS IN CHILDREN OF A TRADITIONAL COMMUNITY IN THE MUNICIPALITY OF BARBALHA, CEARÁ, BRAZIL.

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## Abstract

**Background:** The use of natural resources for the treatment of acute respiratory infections in children is a widespread practice within traditional communities, especially by women by being the primary caregivers. This study aimed to perform ethnobiological survey of plants and animals used for the treatment of acute respiratory infections in children of a traditional community in the municipality of Barbalha, Ceará, Brazil. **Methods:** It is a descriptive exploratory study with a quantitative approach, developed in Sítio Santo Antônio, in the municipality of Barbalha, Ceará, Brazil. As a tool for data collection, was applied a questionnaire and a semi-structured interview. Data analysis used descriptive statistics (simple and percentage rate) and the Relative Frequency of Citation.

**Results:** The research included a total of 54 informants. In total, there were 38 species cited. According to the Relative Frequency of Citation the following species were the most cited: *Ocimum basilicum* L. (0.59), *Eucalyptus globulus* Labill (0.59), *Plectranthus amboinicus* (L.) Spreng (0.42), *Hyptis suaveolens* (L.) Poit. (0.24), *Allium aescalonicum* L. (0.22) and *Mentha arvensis* L. (0.18). Among the symptoms mentioned by the research subjects to treat the acute respiratory infections in childhood, there were: fever; cough; coughing with secretions; sore throat; hoarseness; tiredness; nasal congestion.

**Conclusions:** It is important the knowledge about the usefulness of natural resources as alternative practices in diseases treatment, seeking to rescue popular knowledge used in the traditional community and fomenting the need to consider cultural aspects in the full practice to children's health care.

**Keywords:** Ethnobotany; Ethnomedicine; Acute respiratory infections; Natural products; Children's Health.

## Introduction

Acute respiratory infection (ARI) is a clinical syndrome with respiratory viruses as the most common infectious agents such as the respiratory syncytial virus or *Streptococcus pneumonia* and *Haemophilus influenza* bacterias (Rigat et al., 2013).

It is estimated that about 4 million people die from ARI annually, and the lower respiratory tract infections are responsible for 98% of these deaths, mainly affecting infants, children and the elderly population (WHO, 2014).

Thus, the ARI is a problem of contemporary public health and Brazil is one of the 15 countries with the highest number of clinical pneumonia cases in children under five years old. (Cardoso, 2010).

In the risk factors associated with higher frequencies of ARI episodes in childhood, there are low birth weight, malnutrition, poor or no breastfeeding, neglect of immunization, family of low income, and use of inappropriate clothing for the climate and the presence of smokers in the house. This highlighting that the ARI in Brazil is in the group of childhood illness (Fornazari et al., 2003; Mello et al., 2009).

Based on the epidemiological relevance of respiratory tract infections in childhood, especially in developing countries, and with prevalence and risk factors mainly related to socioeconomic variables, it is important to understand how the care process is established by mothers and/or responsible for the treatment and ARI management.

It is relevant to focus especially on traditional knowledge been reproduced and perpetuated in caring for children; the use of unconventional medicine and how these cultural medical practices are configured in the reality of contemporary traditional communities and their contributions to conventional medical practices (Raymundo, 2013).

Some studies published in the country have considered about the traditional knowledge and the influence of this culturally learned knowledge on childcare, especially addressing the mother's perspective in this process (Alves et al., 2003; Ichisato et al., 2001; Iserhard et al., 2009; Zanatta et al., 2007).

From the information above, it is observed that it is important to develop research that seeks to rescue established traditional knowledge by assessing the level of influence that determine health care employees in a particular community. This will enable alternatives to pharmacological treatment of high cost and foster the need to consider cultural aspects in the integral practice of health care.

In this context, this study aimed to survey the species of plants and animals used by mothers or caregivers for the treatment of acute respiratory infections (ARI) in a traditional community and to identify ways to use these flora and fauna resources.

**Materials and methods**

It is a descriptive, exploratory study with a quantitative approach developed in the Santo Antônio community, located in Arajara District, in the municipality of Barbalha (CE) in the period from May 2013 to September 2014.

Barbalha is 553 km from the state capital, Fortaleza, located specifically at latitude 7° 18' 18" S and longitude 39° 18' 7" W, adjacent to the Chapada do Araripe having an area of a territorial unit of 569.508 Km<sup>2</sup>. In 2013, the estimated population of the municipality of Barbalha was 57,818 inhabitants, with a population density of 97.14 (hab/km) (IBGE, 2010).

Its climate is characterized as semi-arid tropical hot, *Caatinga* is the predominant vegetation, although it shows areas of *Cerradão* and *Cerrado*. It is noteworthy the presence of the Araripe Geopark in the municipality of Barbalha (also found in Santana do Cariri, Nova Olinda, Crato, Juazeiro do Norte and Missão Velha).

The Geopark was established in 2006, located in the Chapada Araripe and the region of Araripe Sedimentary Complex, being the only national representative in the Global Geoparks Network (Brito et al., 2012).

In the municipality of Barbalha different communities are possible to find, the Sítio Santo Antônio community among them. The reason Santo Antônio community was chosen for data collection is because it is a traditional community, in accordance with the requirements given by the Ministry of the Environment (Brasil, 2014).

Thus, Santo Antônio community highlights with the following characteristics: it occupies, permanently or temporarily, traditional territories; it uses natural resources, conditioning it as a tool for cultural, social, religious, ancestral and economic community reproduction and it has mainly knowledge and practices originated by oral tradition (Haverroth, 2013).

The study population consisted of residents in the community, aged between 12 and 90 years old having knowledge regarding the use and management of medicinal plants and animals for the treatment of acute respiratory infections in children. The inclusion of adolescents in the sample was given by high pregnancy rates in adolescence expressed in Ceará state (Martins et al., 2011).

For data collection, strategies were used as the "rapport" and the composition of the sample was through the "snowball" technique (Albuquerque et al., 2010).

The instrument for data collection was the closed questionnaire for socioeconomic characterization of the research subjects. Soon after, a semi-structured interview applied, as it allows greater flexibility and is an effective tool to collect descriptive data on the individual's language.

To finish the composition of the sample, the criterion of saturation of answers was applied. For this study, the saturation was established where more than 50% of a group of informants did not mention different species names - compared to other respondents groups (Fontanella et al., 2011).

Descriptive statistics was used for data analysis (simple and percentage rate) and the Relative Frequency of Citation (RFC), widely used in ethnobotanical surveys (Bano et al., 2014) and obtained from the ratio: FC/N, where FC is the number of informants who mentioned species use and N is the total number of informants in the study.

It is noteworthy that during the development of the research, all the requirements of the Guidelines and Standards of Research Involving Human Beings were met, regulated by Resolution 466/12 of the National Health Council (CNS).

Therefore, in line with the ethical aspects, the research was submitted to the Research Ethics Committee of the Regional University of Cariri - URCA, located in the municipality of Crato - CE / Brazil, to its contemplation and analysis. It was approved by the CEP under number 705.497.

**Results and discussion****Characterization of the Respondents**

The research included a total of 54 informants randomly divided into seven different groups, according to the order of the interviews. Groups 1 to 6 were composed of 8 respondents each, and the group 7 had 6 participants.

In the total, 44.44% of the respondents were male, and 55.56% were female. The age group with the largest representation was between 30 to 45 years old (27.78%), followed by the group of young adults (22-29 years old), representing 20.37%, and the group aged from 46 to 59 years old (20.37%) (Table 1).

**Table 1:** Profile of informants of Sítio Sto. Antônio (Barbalha) – CE.

Municipality	Place	N	%
Barbalha – CE	Sítio Sto. Antônio	54	100
<b>Gender</b>			
Male		24	44.44
Female		30	55.56
<b>Age Group</b>			
12-21		9	16.67
22-29		11	20.37
30-45		15	27.78
46-59		11	20.37
60-75		3	5.56
76-96		5	9.25
<b>Time of residence in the area</b>			
< 5 years		--	--
≥ 5 < 10 years		3	5.56
≥ 10 < 20 years		8	14.81
≥ 20 < 30 years		12	22.22

≥ 30 < 40 years	8	14.81
≥ 40 < 50 years	11	20.37
≥ 50 < 60 years	9	16.67
≥ 60	3	5.56
<b>Education</b>		
Non-educated	--	--
Incomplete Elementary School	15	27.78
Complete Elementary School	3	5.56
Incomplete High School	12	22.22
Complete High School	23	42.59
Others	1	1.85
<b>Occupation</b>		
Community health agent	1	1.85
Farmer	28	51.85
Retired	9	16.67
Self-employed	3	5.56
Commercial employee	1	1.85
Student	6	11.11
Manicure	1	1.85
Masson	1	1.85
Teacher	1	1.85
Seller	3	5.56
<b>Marital status</b>		
Single	13	24.07
Married	38	70.37
Widow/widower	3	5.56
Divorced	--	--

Regarding the residence time, it is noteworthy that most of the sample (22.22%) reported living in the area to a higher or the same period of 20 years and below 30 years, followed by those living in the area to a higher or equal period of 40 years and less than 50 years (20.37%).

#### Species mentioned for the treatment of symptoms and/or pathologies related to Acute Respiratory Infections (ARI) in children

Through data analysis, some plants used in Santo Antônio community for the treatment of ARI were possible to identify. It is noteworthy that although cited less often, some animal species have also been mentioned (Table 2). The most common form of traditional use were teas, mentioned 32 times, with two preparation methods: by decoction and infusion. Lambdoreos (home-made syrups) were also noteworthy associated with the use of plant species by 20 times.

#### Most frequently cited species by the respondents according to the Relative Frequency Citation (RFC) for ARI treatment

A significant number of respondents mentioned more than one species by an injury. The species with the highest RFC were all plants species.

The following species have the highest number of citations: *Ocimum basilicum* L. (0.59); *Eucalyptus globulus* Labill (0.59); *Plectranthus amboinicus* (L.) Spreng (0.42); *Hyptis suaveolens* (L.) Poit. (0.24); *Allium aescalonicum* L. (0.22); *Mentha arvensis* L. (0.18), all mentioned 32, 32, 23, 13, 12 and 10 times, respectively.

Also, the species *Cajanus cajan* (L.) Millsp. (0.16); *Punica granatum* L. (0.16) and *Scoparia dulcis* L. (0.14) were mentioned 9, 9 and 8 times, respectively (Table 3).

Considering the RFC, the *Ocimum basilicum* L. and *Eucalyptus globulus* Labill were the plant species most frequently cited by respondents for the treatment of ARI, as well as some isolated symptoms. We initially considered the species *Ocimum basilicum* L, or as is commonly known "basil".

In the case of *Ocimum basilicum* L., it is a plant belonging to the Lamiaceae family and is widely used by traditional medicine, mainly due to its essential oils, with methyl chavicol, linalool, geranial and estragol as the major constituents (Veloso et al., 2014).

Research participants indicate that the *Ocimum basilicum* L. was effective for cough, flu in general, bronchitis and sore throat. This information is in line with other research, such as Albertasse et al. (2010).

In the ethnobotanical study of Ribeiro et al. (2014) the species was mentioned as effective for the treatment of "flu", in Ventrúsculo et al. (2006) research, the plant is cited by respondents as useful for a "sore throat".

Residents of Santo Antônio community reported that *Eucalyptus globulus* Labill is the plant used for the treatment and management of flu; nasal congestion; sinusitis; fever and cough.

According to Lorenzi et al. (2008), eucalyptus is a large tree, with opposite leathery leaves and operculate fruits. The composition of the essential oil of eucalyptus has  $\alpha$ -Pinene;  $\beta$ -myrcene;  $\alpha$ -phellandrene;  $\alpha$ -terpinene; Limonene; 1,8-Cineole  $\beta$ -Ocimene;  $\gamma$ -Terpinene; p-Cymene; Epoxy linalool, Linalool oxide, linalool Menthol, among others.

Its medicinal properties are often mentioned in to in biopanning studies and ethnobiological surveys, particularly for disorders related to human respiratory tract been indicated as an alternative to antibiotic treatment (Pereira, 2014).

**Table 2:** List of species used by the community for the treatment of symptoms of ARI in children.

POPULAR NAME	SCIENTIFIC NAME	SYMPTOM TREATED/ PATHOLOGY	PARTS USED	WAYS OF TRADITIONAL USE
<b>Alcaçuz</b>	<i>Glycyrrhiza glabra</i> L.	Cough; Sore Throat	Leaf; Root	Tea (infusion); Tea (decoction)
<b>Alecrim</b>	<i>Pectis brevipedunculata</i> Sch. Bip.	Fever; Flu; Sinusitis	Leaf; Root	Tea (infusion); Tea (decoction); Bath; Lamberdor
<b>Alfavaca</b>	<i>Ocimum basilicum</i> L.	Cough; Flu; Bronchitis; Sore Throat	Leaf	Tea (infusion); Tea (decoction); mouthwash; Gargle
<b>Alfavacão</b>	<i>Hyptis suaveolens</i> (L.) Poit.	Flu; Fever; Nasal congestion	Leaf	Tea (infusion); Bath in the Head
<b>Algodão</b>	<i>Gossypium hirsutum</i> L.	Pneumonia; Flu; Coughing with secretions; Fever	Seed; Leaf	Tea (infusion); Juice
<b>Alho</b>	<i>Allium sativum</i> L.	Flu; Fever; Throat infection	Tooth (bulbils); Leaf	Tea (infusion); Tea (decoction); Juice;Lamberdor
<b>Anador</b>	<i>Alternanthera brasiliana</i> (L.) Kuntze	Sore throat; Fever	Leaf	Tea (infusion); Tea (decoction)
<b>Andu</b>	<i>Cajanus cajan</i> (L.) Millsp.	Bronchitis; colds; Sore throat; Fever; Cough	Leaf	Tea (decoction); Tea (infusion);Lamberdor
<b>Arruda</b>	<i>Ruta graveolens</i> L.	Fever; Respiratory infection in general	Leaf	Tea (infusion)

**Table 2:-** List of species used by the community for the treatment of symptoms of ARI in children. (Continued)

<b>Bananeira</b>	<i>Musa paradisiaca</i> L.	Cough; Inflammation of the throat; Bronchitis; Flu	Leaf; Latex	Lamberdor; Juice
<b>Camará</b>	<i>Lantana Camaia</i> L.	Cough; Flu	Leaf	Tea (infusion); Tea (decoction); Lamberdor
<b>Capim-santo</b>	<i>Cymbopogon citratus</i> (DC.) Stapf	Fever	Leaf	Tea (infusion)
<b>Carrapicho-de-Agulha</b>	<i>Achyrocline satureioides</i> (Lam.) DC.	Sore throat; Fever.	Leaf	Tea (infusion)
<b>Cebolinha Branca</b>	<i>Allium aescalonicum</i> L.	Sore Throat; Coughing with secretions; Cough; Hoarseness	Bulb; Leaf	Tea (infusion); Lamberdor
<b>Cidreira/ Erva-Cidreira</b>	<i>Lippia alba</i> (M.) N.E. Br.	Flu; Fever; Coughing with Secretion	Leaf	Tea (infusion)
<b>Contra-Erva</b>	<i>Dorstenia cayapia</i> Vell	Fever; Bronchitis; Sore throat; Respiratory Infection in General	Leaf; Roots	Tea (infusion); Tea (decoction).
<b>Eucalipto</b>	<i>Eucalyptus globulus</i> Labill	Flu; Nasal congestion; Sinusitis; Fever; Cough	Leaf	Tea (infusion); Tea (decoction); Inhalation
<b>Galinha Caipira</b>	<i>Gallus gallus domesticus</i>	Fever; Flu; Nasal congestion; Cough; Sore throat; Hoarseness	Lard (fat)	Topic; Lamberdor
<b>Gengibre</b>	<i>Zingiber officinale</i> Roscoe	Sore throat; Cough; Fever; Flu	Root	Juice; Macerated;

**Table 2:** List of species used by the community for the treatment of symptoms of ARI in children. (Continued)

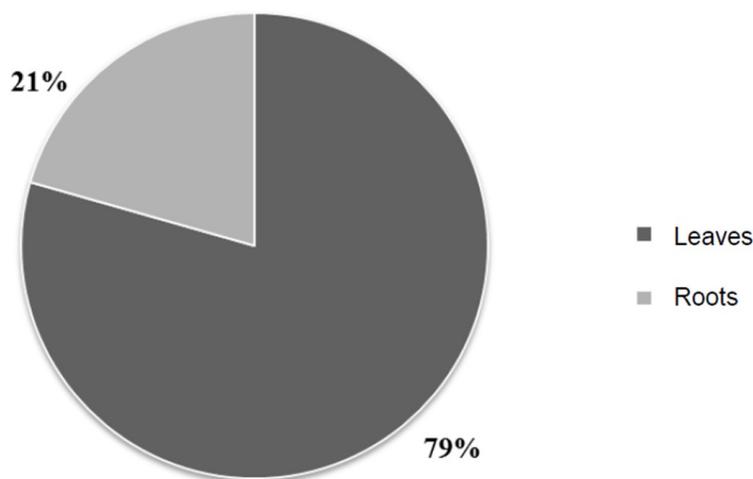
<b>Hortelã</b>	<i>Mentha arvensis</i> L.	Fever; Cough; Nasal congestion	Leaf	Tea (infusion); Bath; Inhalation
<b>Imburana/ Umburana</b>	<i>Commiphora leptophloeos</i> (Mart.) J.B. Gillett	Bronchitis; Flu; Cough; Sore throat; Hoarseness	Bark	Tea (decoction); Tea (infusion); Lambedor; Macerated
<b>Jandaíra</b>	<i>Melipona subnitida</i> D.	Cough; Hoarseness; Sore throat; Coughing with secretions	Honey	Lambedor
<b>Juazeiro</b>	<i>Ziziphos joazeiro</i> Mart.	Flu; Cough; Fever; Bronchitis	Leaf; Stem Bark	Tea (infusion); Tea (decoction); Macerated
<b>Limão</b>	<i>Citrus limon</i> (L.) Burm. f.	Fever; Flu; Cough; Sore Throat	Leaf; Fruit; Bark (fruit)	Juice; Tea (infusion); Lambedor
<b>Macaúba</b>	<i>Acrocomia aculeata</i> (J.) Lodd.	Cough; Flu; Coughing with secretions	Leaf; Bark	Juice; Tea (infusion); Tea (decoction)
<b>Malva do Reino</b>	<i>Plectranthus amboinicus</i> (L.) Spreng	Cough; Sore throat; Bronchitis	Leaf	Tea (infusion); Juice; Lambedor
<b>Mamão/ Mamoeiro</b>	<i>Carica papaya</i> L.	Tiredness; Fever	Nectar; Flower; Sprout	Lambedor; Tea (infusion)
<b>Mandacaru</b>	<i>Cereus jamacaru</i> DC.	Fever; Cough; Bronchitis	Bark; Root; Branches	Tea (infusion); Tea (decoction); Lambedor

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**Table 2:** List of species used by the community for the treatment of symptoms of ARI in children. (Continued)

<b>Mangueira</b>	<i>Mangifera indica</i> L.	Coughing with secretions	Leaf	Tea (infusion); Juice; Lambedor
<b>Mastruz</b>	<i>Chenopodium ambrosioides</i> L.	Fever; Cough; Coughing with secretions; Pneumonia	Leaf	Tea (infusion); Lambedor
<b>Pequi</b>	<i>Caryocar coriaceum</i> Wittm.	Sore throat; Bronchitis; Coughing with secretions	Fruit	Lambedor; Oil (Ingestion)
<b>Piracuru</b>	<i>Bryophyllum pinnatum</i> (L.) Oken	Cough	Leaf	Tea (infusion); Lambedor; Juice
<b>Quina-Quina</b>	<i>Coutarea hexandra</i> (J.) K. Schum.	Fever; The flu; Cough; Sinusitis	Bark	Tea (decoction); Lambedor
<b>Retirante</b>	<i>Acanthospermum hispidum</i> DC.	Fever; Coughing with secretions; Bronchitis	Leaf; Root	Tea (decoction); Tea (infusion)
<b>Romã</b>	<i>Punica granatum</i> L.	Sore throat	Fruit (Bark)	Mouthwash; Gargle
<b>Tejuacu/ Teiú/ Teju</b>	<i>Tupinambis merianae</i>	Sore throat; Cough with secretion; Flu; Hoarseness	Lard(fat)	Friction (Topic)
<b>Urucu</b>	<i>Bixa orellana</i> L.	Fever; Tiredness; Flu; Bronchitis; Pharyngitis; Coughing with secretion	Seed; Root	Lambedor; Macerated; Tea (decoction)
<b>Vassourinha</b>	<i>Scoparia dulcis</i> L.	Fever; Cough; Bronchitis; Sore throat	Root	Tea (decoction)
<b>Chanana</b>	<i>Turnera subulata</i> Sm.	Cough	Root; Leaf	Tea (decoction); Tea (infusion); Lambedor

The most used parts of the plant species were leaves, mentioned 27 times, followed by the roots cited seven times, while for animal species of commonly used parts for acute respiratory infections in children were fat (lard) mentioned twice (Figure 2).



**Figure 2:** Parts of plants commonly used by the community for the treatment of acute respiratory infections in children.

In this context, the findings of Teklay et al. (2013) highlights in a study developed in Kiltie district Awulaelo, Ethiopia, *Eucalyptus globulus* Labill as the species with higher citations for medicinal use of practical applications, with the antitussive as the actions brought by the research.

The second most cited species for this research was *Plectranthus amboinicus* (L.) Spreng, or *malva-do-reino*. The species

**Table 3:** Relative frequency of citation - RFC of mentioned species by the community for the treatment of ARI in children.

	Species	RFC
1.	<i>Glycyrrhiza glabra</i> L.	0.07
2.	<i>Pectis brevipedunculata</i> Sch. Bip.	0.03
3.	<b><i>Ocimum basilicum</i> L.</b>	<b>0.59</b>
4.	<b><i>Hyptis suaveolens</i> (L.) Poit.</b>	<b>0.24</b>
5.	<i>Gossypium hirsutum</i> L.	0.07
6.	<i>Allium sativum</i> L.	0.03
7.	<i>Alternanthera brasiliana</i> (L.) Kuntze	0.01
8.	<i>Cajanus cajan</i> (L.) Millsp.	0.16
9.	<i>Ruta graveolens</i> L.	0.07
10.	<i>Musa paradisiaca</i> L.	0.01
11.	<i>Lantana Camaia</i> L.	0.01
12.	<i>Cymbopogon citratus</i> (DC.) Stapf	0.03
13.	<i>Achyrocline satureioides</i> (Lam.) DC.	0.01
14.	<b><i>Allium aescalonicum</i> L.</b>	<b>0.22</b>
15.	<i>Lippia alba</i> (M.) N.E. Br.	0.07
16.	<i>Dorstenia cayapia</i> Vell	0.03
17.	<b><i>Eucalyptus globulus</i> Labill</b>	<b>0.59</b>
18.	<i>Gallus gallus domesticus</i>	0.07
19.	<i>Zingiber officinale</i> Roscoe	0.03
20.	<b><i>Mentha arvensis</i> L.</b>	<b>0.18</b>
21.	<i>Commiphora leptophloeos</i> (Mart.) J.B. Gillett	0.07
22.	<i>Melipona subnitida</i> D.	0.01
23.	<i>Ziziphos joazeiro</i> Mart.	0.05
24.	<i>Citrus limon</i> (L.) Burm. f.	0.01
25.	<i>Acrocomia aculeata</i> (J.) Lodd.	0.09
26.	<b><i>Plectranthus amboinicus</i> (L.) Spreng</b>	<b>0.42</b>
27.	<i>Carica papaya</i> L.	0.01
28.	<i>Cereus jamacaru</i> DC.	0.03
29.	<i>Mangifera indica</i> L.	0.07
30.	<i>Chenopodium ambrosioides</i> L.	0.05
31.	<i>Caryocar coriaceum</i> Wittm.	0.01
32.	<i>Bryophyllum pinnatum</i> (L.) Oken	0.01

33.	<i>Coutarea hexandra</i> (J.) K. Schum.	0.03
34.	<i>Acanthospermum hispidum</i> DC.	0.12
35.	<i>Punica granatum</i> L.	0.16
36.	<i>Tupinambis merianae</i>	0.01
37.	<i>Bixa orellana</i> L.	0.03
38.	<i>Scoparia dulcis</i> L.	0.14
39.	<i>Turnera subulata</i> Sm.	0.03

of *Plectranthus* (Lamiaceae) have wide use in traditional medicine in Africa, America, Oceania, and Asia (Carneiro et al., 2010). In this sense, the *malva-do-reino* is characterized by being "a perennial, erect, very aromatic herb [...] with deltoid-ovate leaves, with truncated base and jagged, brittle margins, and prominent veins on the back" (Lorenzi et al., 2008).

Essential oils of *Plectranthus amboinicus* (L.) Spreng are composed by Copaene;  $\beta$ -Bourbonene; trans-caryophyllene; Humulene; Germacrene-D; Valencene;  $\beta$ -Bisabolene  $\Delta$ -Cadinene and Caryophyllene oxide (Bandeira et al., 2011).

In the study by Torres et al. (2005) the author states that the species is used to combat bronchitis and its use is consistent for the treatment of diseases related to the respiratory system, since in its essential oil there is thymol and carvacrol antimicrobial properties.

In Rodrigues et al. (2014) *malva-do-reino* is also among the most cited species, with ethnopharmacological signs for the medical treatment of a cough, phlegm in the chest, bronchitis and flu.

The third more cited species for this research was the *Hyptis suaveolens* (L.) Poit., characterized by being an annual subshrub, erect, branched, strongly aromatic, with foursquare stalks. It has opposite leaves, membranous, pubescent glands [...] and used in home-made medicine" (Lorenzi et al., 2008).

Regarding the essential oils of the species *Hyptis suaveolens* (L.) Poit, the following components are highlighted: Sabinene, limonene, bicyclogermacrene,  $\beta$ -phellandrene and 1.8-cineol as the main constituents, although its composition depends on the geographic region where the species was collected (Azevedo et al., 2001).

In this context, Jesus et al. (2009) mentions that *Hyptis suaveolens* (L.) Poit has antioxidant and anti-inflammatory activity, highlighting also its antimicrobial activity, according to pharmacological tests (Nantitanon et al., 2007).

This plant species, popularly known as basil, has a broad application in rustic medicine and according to Morais et al. (2005). "The presence of high cineole content in the essential oil of the leaves allows its use for flu".

This information is consistent with the respondents' statements, mentioning the use of the species to treat symptoms in children such as flu, fever, and nasal congestion.

The findings of the ethnobotanical survey conducted by Roque et al. (2010) of plants with medicinal properties of the *caatinga* showed that the use of *Hyptis suaveolens* (L.) Poit is associated with the treatment of flu and runny nose/nasal congestion.

Other studies, such as Kala et al. (2005) where data collection occurred in the Himalayas, India region, the species was indicated to treat colds in general and coughs. Other studies published internationally also list it as the species most commonly used for therapeutic purposes (Cavalcanti et al., 2013; Kabir et al., 2014).

Within the Brazilian public health, specifically considering the Unified Health System, the National Policy on Integrative and Complementary Practices (PNPIC), collaborates with encouragement for the inclusion and the rational use of natural resources in the treatment of various diseases (Brasil, 2006).

Thus, encouraging the use of these natural resources, including a symptomatic approach to the ARI has shown rapid growth in the last two decades (Barros, 2006).

With the gradual implementation of the National Policy on Integrative and Complementary Practices (PNPCI) and the publication of ethnobotanical surveys, as well as bioprospecting research, it is believed that the tendency is that these cultural aspects come to be more valued, especially in primary care, featuring a more rational use of natural resources with medicinal properties, including for the treatment of ARI.

## Conclusions

This study showed that 38 species were cited for the treatment of Acute Respiratory Infections (ARI) in children. Their effects were under a range of symptoms - such as fever, cough, cough with secretion, sore throat, hoarseness, fatigue and nasal congestion - and they would act effectively on the specific respiratory diseases such as pharyngitis; bronchitis and pneumonia.

Considering a significant number of respondents mentioning more than one kind of problem, the Relative Frequency of Citation (RFC) was calculated. For the treatment of ARI in children, the most cited species were all vegetables: *Ocimum basilicum* L. (0.59); *Eucalyptus globulus* Labill (0.59); *Plectranthus amboinicus* (L.) Spreng (0.42); *Hyptis suaveolens* (L.) Poit. (0.24); *Allium aescalonium* L. (0.22) and *Mentha arvensis* L. (0.18).

It is noteworthy that the results obtained are an important contribution to traditional medicine since they reaffirm the natural resource used by different generations of the community, registering and allowing the reproduction of legitimate knowledge. Also, they are the interests of future studies in the area of bioprospecting, resulting in the discovery of new bioactive compounds to be used for treating various childhood illnesses.

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