

## ORIGINAL ARTICLE

## ETHNOPHARMACOLOGICAL ANALYSIS OF MEDICINAL PLANTS IN A QUILOMBOLA COMMUNITY: EMPHASIS ON CHRONIC DISEASES\*

### HIGHLIGHTS

1. Medicinal plants play an important role in chronic diseases.
2. Nurses should know the plants most used by quilombolas.
3. Boldo is widely used, and there is already positive evidence.
4. Plants can have an impact on quilombolas' quality of life.

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### ABSTRACT

**Objective:** To understand the ethnopharmacological knowledge of medicinal plants used to treat chronic diseases in a *quilombola* community in the Brazilian Amazon. **Method:** A cross-sectional, descriptive study using a semi-structured questionnaire in a *quilombola* community in Macapá, Amapá (Brazil), from March to June 2022. The analysis was carried out using descriptive statistics. **Results:** In the *quilombola* community, women are the main holders of knowledge about medicinal plants, usually acquired from their parents/grandparents. Among the various plants mentioned, boldo was the most frequently mentioned (13.78%) for treating liver diseases, followed by mastruz (6.89%) for inflammatory issues. **Conclusion:** The study's results made it possible to understand the ethnopharmacological knowledge of phytotherapy in treating chronic non-communicable diseases and how it can act in an alternative and positive way in the clinical manifestations or complications caused by these diseases.

**DESCRIPTORS:** Medicinal Plants; Ethnopharmacology; Chronic Disease; Phytotherapy; *Quilombolas*.

### HOW TO REFERENCE THIS ARTICLE:

Santos TG dos, Amaral RR do A, Vieitas DRI, Monteiro Neto M de AB. Ethnopharmacological analysis of medicinal plants in a quilombola community: emphasis on chronic diseases. *Cogitare Enferm.* [Internet]. 2023 [cited "insert year, month, day"]; 28. Available from: <https://dx.doi.org/10.1590/ce.v28i0.93158>

## INTRODUCTION

The World Health Organization (WHO) defines medicinal plants as any plant that contains, in one or more organs, substances that can be used for therapeutic purposes or that are precursors of semi-synthetic drugs<sup>1</sup>. This concept is similar to the one defined by the National Health Surveillance Agency (ANVISA), which defines a medicinal plant as any plant or parts containing the substances responsible for the therapeutic action<sup>2</sup>.

For some authors<sup>3</sup>, the transfer and preservation of traditional knowledge is essential for maintaining the cultural identity of rural communities, which is why research that corroborates the conservation of ethno-knowledge is fundamental. In this sense, the use of medicinal plants is related to popular culture, which is passed down from generation to generation in traditional communities<sup>4</sup>. In addition, medicinal plants continue to occupy a prominent place in society, where in many regions, their consumption is indicated by the fact that they are easy to obtain and less expensive than industrialized medicines.

From this perspective, some studies emphasize that medicinal plants are commonplace in the Amazon since the Amazon rainforest has a series of natural resources that make up the raw material for popular medicine. In this sense, various interethnic groups have used different plants as sources of healing, such as the *quilombolas*. In these communities, the use and knowledge of medicinal plants have influenced socio-cultural relations<sup>5</sup>.

Thus, this research focuses on *quilombola* communities, which is the name given to places formed predominantly by black descendants of enslaved people who organized themselves into quilombos. These sites were one of the main forms of resistance against the slave system during the colonial period. Even after the abolition of slavery in 1888, these communities continued to exist and resist<sup>6</sup>.

The use of medicinal plants to treat illnesses is an explicit part of human culture. Ethnomedicinal knowledge is a valuable ancient resource for the care of people's health and is, therefore, ancient knowledge for a future society to use sustainably and conserve<sup>7</sup>. However, there is little appreciation of this knowledge by health professionals. Thus, the interaction between popular and scientific knowledge is necessary to ensure exchanges between types of knowledge. In addition, this relationship provides health professionals with knowledge of how medicinal plants are used in the assisted community<sup>8</sup>.

The literature shows that it is common for people with NCDs to use herbal medicines at the same time as industrialized drugs. However, this can lead to risks and compromise the control of diseases such as *Diabetes Mellitus* (DM) and Systemic Arterial Hypertension (SAH)<sup>9</sup>. It is therefore important to reflect on the possible drug interactions between the use of allopathic medicines, which are generally used by NCD sufferers, and medicinal plants. This study aims to understand the ethnopharmacological knowledge of medicinal plants used to treat chronic diseases in a *quilombola* community in the Brazilian Amazon.

The use of herbal medicines by men with chronic diseases simultaneously as industrialized drugs can lead to health problems, compromising treatment and even causing the cancellation of medicines used to control DM and SAH, often indicated by family and friends<sup>10</sup>.

The literature exposes the use of medicinal plants as preventive care in the development of diseases, a factor to be explored scientifically to analyze the potential and weaknesses of this incorporation together with the traditional treatment offered in specialized health services<sup>11</sup>.

## METHOD

This is a cross-sectional, descriptive study with a quantitative approach, carried out in the rural community of *Cria-ú* or Curiaú, located in the state of Amapá (Brazil), close to the urban center of the city of Macapá, 11 km north of the city center. It is considered a black community of Afro-Brazilian descendants of a former quilombo called Curiaú, formed in the 18th century. The place is also considered a historical and ecological site.

A total of 150 *quilombolas* took part in the study, chosen by convenience sampling, and eligible were people of both sexes who lived in the *quilombola* community and were aged 18 or over. The exclusion criteria are people under 30 who have not agreed to participate in the research and individuals who do not live in the *quilombola* community. Data was collected using a structured form between March and June 2022. The data of interest was on the sociodemographic profile, prevalent diseases, ethnopharmacology, and therapeutic indication of medicinal plants.

The data was tabulated using *Microsoft Excel software*, version 2016, and then analyzed using IBM SPSS, version 26. The analysis was carried out using descriptive statistics (absolute and relative frequency) and discussion in the light of the literature and the reality found. The results were presented in tables and graphs according to the type of variable studied.

The study was approved by the Research Ethics Committee of the Federal University of Amapá (UNIFAP) under opinion number 5.208.422.

## RESULTS

The study included 150 individuals, of whom 91 (60.67%) were female, and 108 (72%) participants were aged between 31 and 60, with an average of 45.9 years. In addition, 48% of the participants had a diagnosed chronic disease, with Systemic Arterial Hypertension (SAH) and *Diabetes Mellitus* (DM) being the most prevalent (Table 1).

**Table 1** - Sociodemographic data of the participants from the *quilombola* community. Macapá, AP, Brazil, 2022.

Variables	n	%
<b>Gender</b>		
Male	59	39.33
Female	91	60.67
<b>Age group</b>		
Average =45.9		
Between 18 and 30 years old	8	5.33
Between 31 and 60 years old	108	72
Over 60	34	22.67

<b>Religious orientation</b>		
No religion	17	3.78
Evangelical	92	20.44
Catholic	297	66
Umbanda	9	2
Others of African origin	35	7.78
<b>Diagnosed chronic illness</b>		
One or more chronic diseases	72	48
No chronic diseases	78	52
<b>Most prevalent chronic diseases*</b>		
Systemic Arterial Hypertension	46	50
<i>Diabetes Mellitus</i>	24	26.09
Rheumatic diseases	12	13.04
Chronic respiratory diseases	7	7.61
Obesity	3	3.26

\*Some participants had more than one chronic disease concomitantly.

Source: Prepared by the authors (2022).

In order to identify the most commonly used medicinal plants by the community's residents, the study categorized the therapeutic indications most cited by the individuals. According to the findings, the plant *Plectranthus barbatus*, commonly known as Boldo, was the most frequently mentioned medicinal species, cited by 62 (24.31%) of the *Quilombolas*. The second most commonly mentioned plant was *Dysphania ambrosioides*, known as Mastruz, with 31 (12.16%) mentions. In the context of chronic diseases, the therapeutic indications mentioned by the participants were quite varied, such as liver problems, inflammatory diseases, and hypertension, among others (Table 2). It should be noted that all 150 (100%) interviewees said they knew of at least one medicinal plant. The most cited plants in this study for the treatment of SAH were *Melissa officinalis*(L) (Lemon Balm) and *Mentha spicata* (Mint).

**Table 2** - List of medicinal plant species used therapeutically by residents of the *quilombola* community. Macapá, AP, Brazil, 2022.

Botanical name/ Family*	Vernacular name	Part used	Quotes n (%) **	Main use
<i>Plectranthus barbatus</i>	Bilberry	Leaves	62 (24.31)	Hepatopathies
<i>Dysphania ambrosioides</i>	Mastruz	Leaves	31 (12.16)	Anti-inflammatory
<i>Gossypium arboreum</i> L.	Cotton sheet	Leaves	25 (9.80)	Anti-hemorrhagic
<i>Justicia acuminatissima</i>	Sara-all	Leaves and stem	22 (8.63)	Anti-inflammatory
<i>Melissa officinalis</i> L.	Cidreira	Leaves	21 (8.21)	Antihypertensive
<i>Ocimum basilicum</i> L.	Basil	Leaves	19 (7.45)	Digestive
<i>Aloe vera</i>	Babosa	Leaves	14 (5.49)	Healing
<i>Citrus limon</i>	Lemon	Leaves, bark, and juice	14 (5.49)	Respiratory diseases
<i>Mentha spicata</i>	Hortelã	Leaves	13 (5.10)	Soothing
<i>Allium sativum</i>	Garlic	Bulb	12 (4.71)	Antihypertensive

<i>Ruta graveolens</i>	Rue	Leaves	11 (4.31)	Healing
<i>Arrebidaea chica</i> Verlot.	Pariri	Leaves	11 (4.31)	Nephropathy/Anti-inflammatory

\*Plants referred to by regional/local vernacular names;

\*\*Interviewees reported using more than one plant species therapeutically.

Source: Prepared by the authors (2022).

## DISCUSSION

NCDs are the leading cause of disability and premature mortality in the world, responsible for the deaths of 41 million people every year, equivalent to 71% of all deaths<sup>12</sup>. Its advance is due to the gradual aging of the population associated with the process of epidemiological transition, characterized by an increase in chronic degenerative diseases and a reduction in acute infectious diseases. Among the CNCDs, cardiovascular disease, DM, cancer, and chronic respiratory disease are the ones that contribute most to the burden of morbidity and mortality, causing a worsening quality of life, permanent clinical complications, loss of autonomy, and functional incapacity<sup>13-14</sup>.

NCDs require continuous treatment, and polytherapy is often needed, the continuous use of five or more drugs<sup>15</sup>. However, cultural or socio-economic factors can be barriers to the use of these drugs, and so people look for alternatives. One study<sup>16</sup> showed that one in two people with chronic illnesses use herbal products to improve their signs and symptoms.

After analyzing the profile of the participants in this research and comparing it with other studies that address similar issues, it is possible to understand that it is common for this traditional population to use plants as a form of therapy for chronic illnesses. This may be due to the simple fact that they enjoy using them, as well as the culture itself, which encourages the use of medicinal plants. In addition, some authors<sup>17</sup> has said that the use of medicinal plants is related to the ease of access to such products, as well as the high cost of synthetic medicines and difficult access to health services, which encourages self-medication with natural products, based on the myth that "natural doesn't hurt".

Notably, all the participants interviewed reported having knowledge of one or more medicinal plants used for the clinical manifestations caused by chronic diseases. This knowledge is important for boosting ethnobotanical and ethnopharmacological studies since the use of medicinal plants dates back to the beginning of civilization<sup>18</sup>. These studies, therefore, play an important role in adding to knowledge about the use of medicinal plants. In this way, this knowledge can relativize the positivist paradigm in health and value traditional knowledge and the sustainable use of Brazilian biodiversity<sup>19</sup>.

The study sample showed a high level of use of plants for medicinal purposes, based on empirical knowledge and without a prescription from a qualified health professional. A study in a *quilombola* community showed that, despite having a health center nearby, they still use medicinal plants to cure illnesses, most of which are grown in their backyards<sup>20</sup>. However, this can represent a risk for the user, especially the elderly, given the uncertainty of safety and efficacy, making them a risk group and making them more susceptible to harmful effects<sup>21</sup>.

The best-known plant among the *quilombolas* was *Plectranthus barbatus* (Boldo), which 62 residents mentioned. A recent study showed that *Plectranthus barbatus* with phenolic compounds has low toxicity in healthy human cells and various biological activities, including bacteriostatic, fungistatic, and immunomodulatory activity<sup>22</sup>. Other authors<sup>23</sup> have mentioned that continuous use of this plant has beneficial effects on the pancreas and the liver.

*Dysphania ambrosioides* (Mastruz) was the second most mentioned plant by the *quilombolas*. In an *in vitro* study, this plant exhibited a combined antioxidant and antiproliferative effect on a broad spectrum of cancer cells, possibly due to the contribution of alkaloids and phenolic compounds in this plant. The authors suggested that mastruz could serve as a prospective material for developing new plant-based antioxidant and antiproliferative agents<sup>24</sup>. In addition, evidence has shown the potential of *Dysphania ambrosioides* against kidney disorders, as well as having anti-diabetic and anti-inflammatory properties<sup>25-26</sup>.

The most prevalent chronic condition among the *quilombolas* was SAH; the most common plant used for this disease was *Melissa officinalis* (Cidreira). In a clinical trial<sup>27</sup> it was found that systolic and diastolic blood pressures decreased significantly after taking Cidreira compared to placebo. In addition, no significant side effects were observed during the study. This plant has a vasodilating, diuretic, and natriuretic effect, contributing to its antihypertensive effect.

Finally, studies like this are important for scientific knowledge. Thus, most drugs are developed from medicinal plants based on the knowledge of local communities and the subsequent isolation of the main active ingredients<sup>28</sup>. Therefore, traditional medicine should not be ignored by formal health systems and should be incorporated and valued to ensure the best health benefits for communities. This incorporation must consider the particularities of each locality, the existence of and dependence on healers, midwives, and prayers<sup>29</sup>.

The study's results made it possible to understand the importance of phytotherapy in treating chronic non-communicable diseases and how phytotherapy can act in an alternative and positive way in the therapy and prevention of various pathologies such as SAH and DM. However, there were many limitations, mainly the number of volunteers needed to complete the final sample, the distance between one home and another, and the reliability of the information, especially from the younger public.

## FINAL CONSIDERATIONS

The study's results made it possible to understand the importance of medicinal plants in treating NCDs and how they can act in an alternative and positive way in the clinical manifestations or complications caused by these diseases. In this sense, it is essential to understand the plants prevalent in this ethnopharmacological prospection, as they can impact the quality of life of *quilombolas* and have interactions with synthetic medicines.

The conclusion is that traditional knowledge about medicinal plants and their use as a therapeutic resource has been preserved. Furthermore, there is a clear need to prioritize measures in the public sector to enhance this complementary/alternative practice. However, it should be borne in mind that this traditional knowledge of medicinal plants is not without its dangers. Therefore, awareness of the risks inherent in using these plant species must be raised, given the poisoning, abuse, drug interactions, and problems arising from irrational use.

Considering the importance of this topic, it is necessary to continue with new studies aimed at the use of phytotherapy in the treatment of chronic non-communicable diseases. Thus, this research will provide scientific support for the scientific validation of medicinal plants used by the *quilombola* population as an alternative treatment for chronic diseases and contribute to future pharmacological studies and phytotherapeutic development.

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\*Article extracted from the master's "PROSPECÇÃO ETNOFARMACOLÓGICA DE PLANTAS MEDICINAIS EM UMA COMUNIDADE QUILOMBOLA DO MUNICÍPIO DE MACAPÁ – ÊNFASE EM DOENÇAS CRÔNICAS", UNIVERSIDADE FEDERAL DO AMAPÁ, MACAPÁ, AP, BRASIL.

**Received:** 27/11/2022

**Approved:** 17/08/2023

**Associate editor:** Dra. Luciana Nogueira

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ISSN 2176-9133



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