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SURVEY OF MEDICINAL PLANTS USED BY COMMUNITIES IN THE URBAN AREA IN THE MUNICIPALITY OF MOJU/PA

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ABSTRACT

The objective of the work was to survey medicinal plants used in urban communities in the municipality of Moju/PA and will contribute to a broader understanding of the role of these species in the daily life of the population and to the appreciation of the cultural and natural heritage of the Amazon. The study was carried out in the municipality of Moju/Pará. The research was carried out in different stages, including data collection through semi-structured interviews, participant observation and bibliographic research. The methodology adopted allowed a deep understanding of the practices of use of medicinal plants in the urban context, focusing on the identification of the species used, their applications and the traditional knowledge involved. The plants mentioned by the interviewees were categorized according to their popular name and the scientific identification of the species was carried out based on the specialized literature. The plants were classified according to the diseases for which they are indicated, in addition to the forms of preparation (part of the vegetable) and use. The information obtained in the interviews was analyzed to trace the socioeconomic and cultural profile of the users of medicinal plants, verifying the relationship between factors such as gender, age, education and income with the use of these practices. The research respected all ethical aspects related to data collection in urban communities. All participants were informed about the research objectives and written informed consent was obtained before conducting the interviews. The identity of the interviewees was kept confidential, and the research followed the ethical principles recommended for research with traditional populations and local communities.

Keywords: Medicinal Plants. Urban Communities. Traditional Knowledge.

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INTRODUCTION

Medicinal plants play a central role in the health and wellness practices of many communities, being an important part of traditional culture and medicine in various regions of Brazil. In the state of Pará, specifically in the city of Moju, located in the northeast of Pará, the use of medicinal plants is a widespread practice, especially among urban communities that preserve traditional knowledge passed down over generations. The municipality, located in an Amazon region rich in biodiversity, offers a favorable environment for the cultivation and collection of these plants. Medicinal plants are defined as plant species, cultivated or not, for therapeutic purposes. In this sense, ethnobotany is an important science, because, in addition to considering the study of botany and ethnopharmacology simultaneously essential, it also aims to study the interaction of human societies with the plant kingdom, so that traditional knowledge joins modern knowledge (Monteiro; Brandelli, 2017).

The use of medicinal plants by urban populations in Moju is not only a therapeutic alternative, but also a way to preserve traditional knowledge and resist the process of medicalization and industrialization of health. Phytotherapy practices are culturally significant and are usually passed down from generation to generation, thus preserving the ancestral wisdom of local populations about the healing properties of various plant species. According to Oliveira *et al*., (2018), the transfer of knowledge by elderly individuals strengthens the family tradition of using natural resources for the treatment of diseases. In this context, the importance of these investigations is related to the preservation of popular knowledge, which contributes to the rescue of biological diversity and the control of natural resources (Sobrinho *et al*., 2018).

The scenery of the city of Moju is marked by a combination of urban and rural factors, with a strong influence of the riverside and rural communities that surround the city. This environment conducive to the use of medicinal plants reflects a rich intersection between folk medicine and the health needs of the urban population, often with difficult access to modern health services. In addition, knowledge about medicinal plants plays an important role in the local economy, whether through cultivation in backyards, extractivism, or marketing in open fairs and markets. Ethnobotanical studies play a fundamental role in characterizing the perceptions of a given community regarding the use of plants with medicinal properties. In the words of Pauli *et al*., (2017), studies are crucial for the

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identification of community conceptions about the use of medicinal plants and viable therapies in the context of home remedies.

This study aims to survey and document the main species of medicinal plants used by urban communities in Moju, understand their forms of use and the types of diseases for which they are indicated. By carrying out this survey, it seeks to value traditional knowledge and offer a database that can contribute both to the preservation of these practices and to possible scientific investigations that can validate and expand the therapeutic use of these plants. Thus, the present study also aims to identify the socioeconomic profile of medicinal plant users and the way this knowledge is acquired and transmitted within the urban community. Thus, understanding the dynamics of the use of these plants can bring important insights for the promotion of community health and for the development of public policies that value and integrate traditional medicine practices. In this way, the survey of the medicinal plants used in Moju will contribute to a broader understanding of the role of these species in the daily life of the urban population and to the appreciation of the cultural and natural heritage of the Amazon.

METHODOLOGY

The research was carried out in the municipality of Moju (Figure 1), located in the state of Pará. Moju is an Amazonian city that has a rich biological diversity and a strong tradition in the use of medicinal plants. The urban population was the focus of the research, covering different neighborhoods and medicinal plants, the survey was carried out from August 2024 to January 2025, with 202 families in three neighborhoods in that municipality. It was conducted using a qualitative, descriptive and exploratory approach. The research was carried out in different stages, including data collection through semi-structured interviews, participant observation and bibliographic research. Interviews were conducted with residents of the neighborhoods of Moju, selected by convenience, prioritizing individuals recognized by the community as holders of knowledge about medicinal plants, such as healers, root healers, healers, plant sellers at fairs, among others. Sampling was based on the "snowball" method (snowball sampling), in which one interviewee indicates the next, ensuring the reach of key people.

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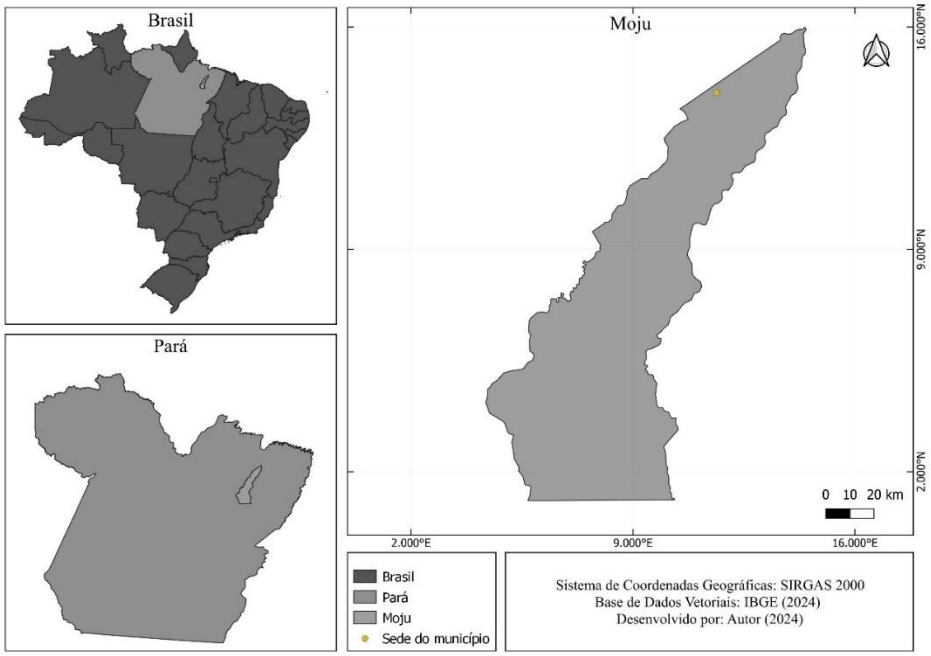
Figure 1. Location of the municipality of Moju/PA, 2025.



Source: Authors, 2025.

The bibliographic review was carried out in books, scientific articles, dissertations and theses that deal with the use of medicinal plants in the Amazon region and in Brazil, with the objective of complementing the data collected in the field and facilitating the scientific identification of the plants mentioned by the interviewees. A collection of scientific databases was used, such as Scielo, Google Scholar, and publications specialized in ethnobotany and phytotherapy. The information obtained in the interviews was analyzed to trace the socioeconomic and cultural profile of the users of medicinal plants, verifying the relationship between factors such as gender, age, education and income with the use of these practices. The methodology adopted allowed a deep understanding of the practices of use of medicinal plants in the urban context, focusing on the identification of the species used, their applications and the traditional knowledge involved.

The research respected all ethical aspects related to data collection in urban communities. All participants have been informed about the objectives of the research and written informed consent will be obtained before conducting the interviews. The identity of the interviewees was kept confidential, and the research will follow the ethical principles recommended for research with traditional populations and local communities. The data were analyzed using descriptive statistics with tables and bar graphs to summarize them, facilitate interpretations.

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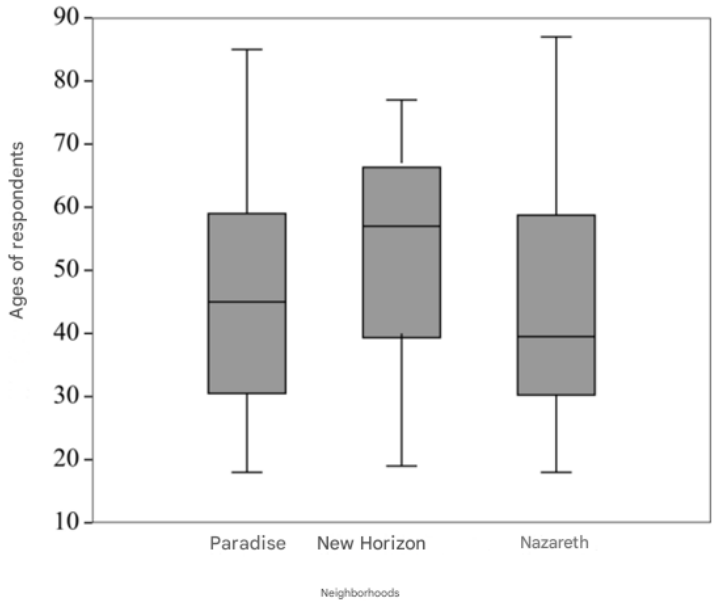
RESULTS AND DISCUSSION

The survey covered three neighborhoods: Nazaré, Novo Horizonte and Paraíso. The interviewees were between 18 and 87 years old, with little variation in age between neighborhoods (Figure 1).

Figure 1. Ages of respondents in the three neighborhoods surveyed.



Source: Authors, 2025.

This age profile reflects a representative sample of different generations within the urban community, allowing us to observe how the practice of using medicinal plants is distributed among the age groups. According to a study by Machado *et al*. (2014), more than 70% of the elderly participants used medicinal plants, and most of them combined this use with conventional medicines. This pattern may indicate that the use of medicinal plants is a common practice among the elderly population, often complementing formal health treatments.

The education level of most of the interviewees was elementary school, followed by high school (Figure 2).

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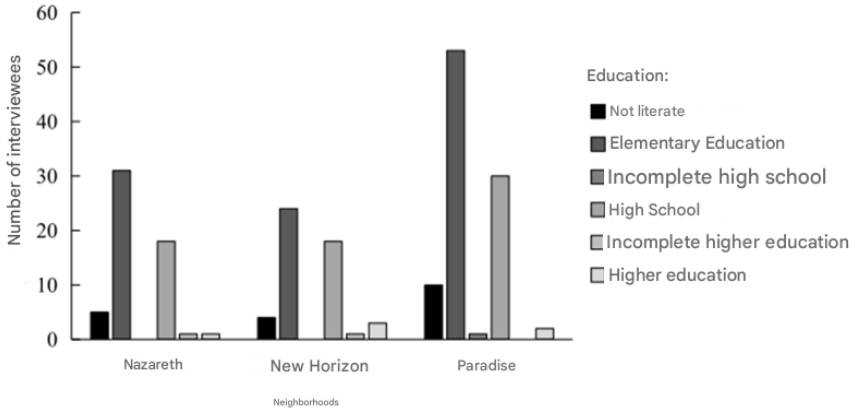
Figure 2. Education level of the interviewees in the three neighborhoods surveyed.



Source: Authors, 2025.

This distribution suggests that a large part of the population in the surveyed neighborhoods has limited access to formal education, which can directly influence knowledge about the use of medicinal plants. In contexts such as Moju's, where access to formal medical treatments can be restricted, especially for those with less education and low income, the use of medicinal plants becomes an important alternative for health. In this sense, Oliveira *et al*. (2010) highlight that in developing countries, where a significant part of the population lives in conditions of vulnerability, knowledge about the use of medicinal plants remains alive as an essential care practice, often replacing industrialized medicines.

The vast majority of people had an income of one minimum wage, followed by people who had an income of half a minimum wage (Figure 3). This data reveals an important characteristic about the population surveyed, which, with a predominantly low income, may face difficulties in accessing health services and conventional medicines, common in lower-class populations. In this context, the use of medicinal plants emerges as a more accessible and economically viable alternative. In fact, as pointed out by Badke *et al*. (2012), the use of medicinal plants has been driven by a number of factors, among which the high cost of industrialized medicines and the difficulty of the population's access to medical care stand out. In addition, there is a growing global trend of returning to the use of natural products, which can be seen as a response to the limitations imposed by traditional therapeutic options, especially in contexts of economic vulnerability.

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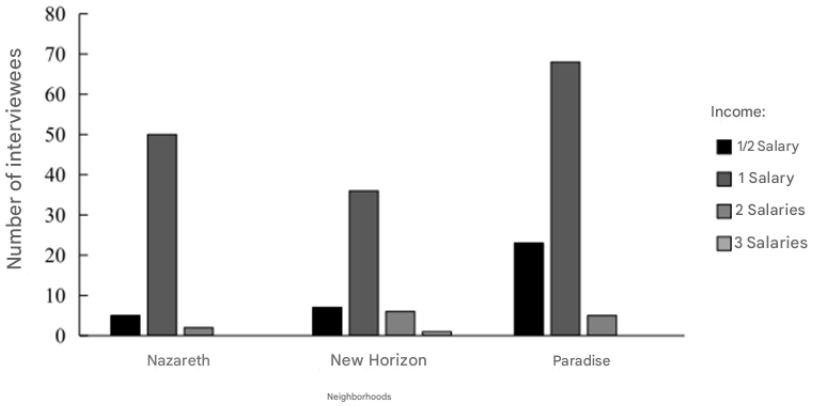
Figure 3. Income of respondents in the three neighborhoods surveyed.



Source: Authors, 2025.

The presence of outliers, as observed in the Paraíso neighborhood, suggests that some residences house larger than average family compositions, possibly indicating multigenerational coexistence or atypical family arrangements. These variations in the number of residents per household have direct implications for the use and management of medicinal plants. In larger families, there is a greater tendency to share practices related to the cultivation and preparation of home remedies, which can facilitate the intergenerational transmission of traditional knowledge about the use of these plants (Machado *et al*., 2014).

In addition, home cultivation can be adopted as a collective strategy to reduce costs with conventional medicines, especially in contexts of greater economic vulnerability. This practice not only reinforces the importance of medicinal plants as an accessible therapeutic resource, but also highlights their role in the social and cultural dynamics of the urban communities studied. In this sense, in each house, it was possible to record a number of residents that varied from one to eight people, with a median always around three people (Figure 4).

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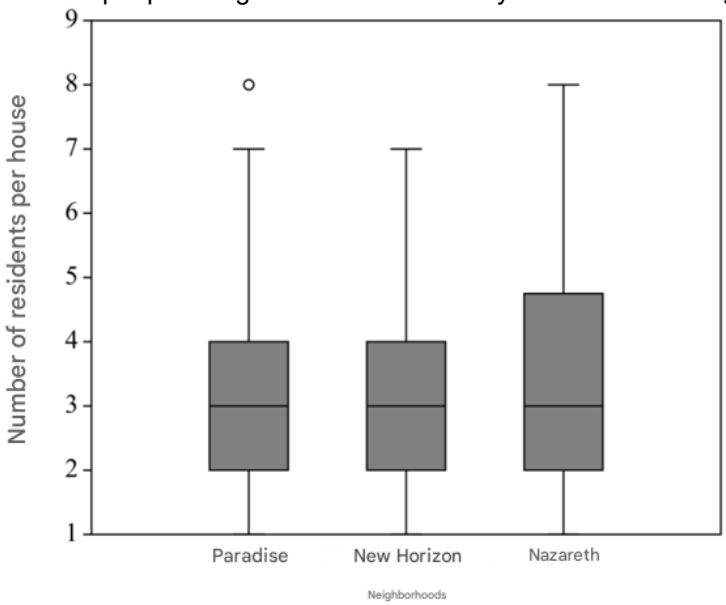
Figure 4. Number of people living in each house surveyed in the three neighborhoods.



Source: Authors, 2025.

Most of the interviewees reported growing only one medicinal plant (82 people). Another large part reported cultivating between two and nineteen plants (120) and only one person reported cultivating 66 plants (Figure 5). This variation in the number of cultivated medicinal plants may be related both to the availability of space and to the level of prior knowledge of individuals about the therapeutic use of the species. As pointed out by Dias (2018), populations that migrate to urban areas often maintain agricultural practices inherited from rural environments, using backyards as fundamental spaces to preserve traditional habits and value knowledge about the use of plants.

In this way, urban backyards play a crucial role not only as cultivation areas, but also as spaces of cultural and economic resilience. They function as extensions of the natural and intangible heritage of communities, allowing the continuity of ancestral practices even in urbanized contexts.

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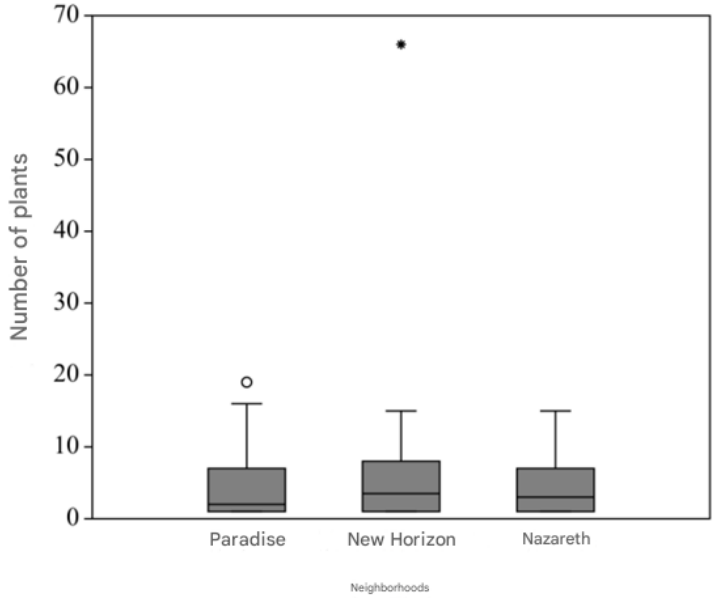
Figure 5. Number of medicinal plants cultivated by the interviewees in each neighborhood.



Source: Authors, 2025.

A total of 149 species of medicinal plants belonging to 60 botanical families were recorded (Table 1).

Table 1. Families, species and popular names of medicinal plants recorded during the research.

Family	Scientific name	Popular name
Acanthaceae	*Bacharis trimera*	Cibalena
	Justicia pectoralis	Floater
	Justicia polygonoides	Blood Flower
	Secondary justice	Blood Flower
	Justacia pectoralis	Floater
Adoxaceae	*Sambucos nigra*	Elderberry
Amaranthaceae	*Alternanthera brasiliana*	Terramycin
	Alternanthera dentata	Terramycin
	Amaranthus viridis	Caruru
	Beta sp.	Beetroot
	Dysphania ambrosioides	Mastruz
	Pedilanthus ambrosioides	Coramine
Amaryllidaceae	*Allium cepa*	Onion
	Allium sativum	Garlic
	Allium schoenoprasum	Chives
Anacardiaceae	*Anacardium occidentale*	Caju do Mato
	Manguifera indica	Sleeve
	Schinus terebinthifolia	Aroeira
Annonaceae	*Annona muricata*	Soursop
Apiaceae	*Coriandrum sativum*	Coriander
	Petroselinum crispum	Parsley
	Pimpinella anisum	Fennel
Asphodelaceae	*Aloe vera*	Aloe
Asteraceae	*Achillea millefolium*	Mille-feuille
	Arnica sp.	Arnica
	Artemisia vulgaris	Cibalena
	Ayapana triplinervis	Japana White

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	Cosmos caudatus	Clove
	Eupatorium ayapanavent	Japana White
	Helianthus annuus	Sunflower
	Lactuca sativa	Lettuce
	Matricaria chamomilla	Camomile
	Solidago chilensis	Arnica
	Spilanthes oleracea	Jambú
	Tanacetum vulgare	Catinga de Mulata
	Taraxucum officinales	Dandelion
	Tithonia diversifolia	Hand of God
Bignoniaceae	*Arrabidaea chica*	Pariri
	Geotrygon montana	Pariri
	Handroanthus albus	Yellow Ipê
	Handroanthus impetiginosus	Ipê Roxo
	Mansoa alliacea	Garlic vine
Brassicaceae	*Brassica juncea*	Mustard
	Brassica oleracea	Cauliflower
Bromeliaceae	*Ananas comosus*	Pineapple
Cactaceae	*Pereskia aculeata*	Ora-Pro-Nobis
Caricaceae	*Carica papaya*	Papaya
Caryophyllaceae	*Dianthus cayophylleis*	Clove
Celastraceae	*Maytenus aquifolium*	Espinheira Santa
	Maytenus ilicifolia	Espinheira Santa
Clusiaceae	*Plantonia insignis*	Bacuri
Combretaceae	*Terminalia catappa*	Castanet
Convolvulaceae	*Ipomoea potatoes*	Sweet potato
Costaceae	*Costus spiralis*	Canarana
Crassulaceae	*Kalanchoe pinnata*	Pirarucu
Cucurbitaceae	*Cucumis sativus*	Cucumber
	Cucurbita sp.	Pumpkin
	Mormodica charantia	São Caetano melon
	Sechium edule	Chayote
Cyperaceae	*Cyperus articulatus*	First
Dioscoreaceae	*Dioscorea trifida*	Purple yam
Equisetaceae	*Equisetum* sp.	Horsetail
Euphorbiaceae	*Euphorbia tirucalli*	Avelós
	Jatropha curcas	White Spinning Top
	Jatropha gossypiifolia	Purple Spinning Top
	Manihot esculenta	Manioc
	Pedilanthus tithymaloides	Coramine
Fabaceae	*Arachis hypogaea*	Peanut
	Bauhinia forficata	Cow's Paw
	Cajanus cajan	Pigeon pea
	Copaifera langsdorffii	Copaiba
	Hymenaea courbaril	Jatoba
	Iron-tendered libidibia	Jucá
	Mimosa pudica	Sleep-Sleep
	Pterodon emarginatus	Sucupira
	Senna macranthera	Stinky
	Stryphnodendron sp.	Barbatimão
	Vouacapoua americana	Acapú
Humiriaceae	*Endopleura uchi*	Yellow Uxi
Iridaceae	*Eleutherine bulbosa*	Little sailor
	Eleutherine plicata	Little sailor
Lamiaceae	*Lavandula officinalis*	Corona
	Lavandula sp.	Lavender
	Leonotis nepetifolia	Frade's Cord
	Melissa officinalis	Lemon Balm
	Mentha spicata	Mint

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	Ocimum basilicum	Basil
	Ocimum canum	Basil
	Ocimum seboi	Paragogoric Elixir
	Origanum vulgare	Oregano
	Plectranthus amboinicus	Malvarisco
	Pogostemon cablin	Patcgouli
	Rosmarinus officinalis	Rosemary
	Salvia officinalis	Salvia
	Salvia rosmarinus	Salvia
Lauraceae	*Cinnamomum verum*	Cinnamon
	Laurus nobilis	Bay leaf
	Persea americana	Avocado
Lecythidaceae	*Bertholletia excelsa*	Brazil nuts
Malpighiaceae	*Banisteriopsis caapi*	Capi vine
	Malpighia emarginata	Acerola
Malvaceae	*Gossypium hirsutum*	Cotton
	Hibiscus sabdariffa	Vinaigrette
	Hibiscus sp.	Hibiscus
	Malva sp.	Mallow
Melastomaceae	*Mouriri pusa*	Puçá
Meliaceae	*Carapa guianensis*	Andiroba
Menispermaceae	*Abuta* sp.	Abuta
Monimiaceae	*Peumus boldus*	Bilberry
Moraceae	*Ficus maxima*	Kangaroo
	Morus nigra	Mulberry
	Rubus subg rubus	Mulberry
Myrtaceae	*Eugenia uniflora*	Surinam cherry
	Psidium guajava	Guava
	Syzygium aromaticum	Clove
Orchidaceae	*Haworthia* sp.	Armadillo Tail
Passifloraceae	*Passiflora edulis*	Passion fruit
Pedaliaceae	*Sesamun indicum*	Segil
Phyllanthaceae	*Phyllanthus niruri*	Quebra Pedra
Phytolaccaceae	*Petiveria alliaceal*	Mucura Caa
Pinaceae	*Cedrela* sp.	Cedar
Piperaceae	*Piper callosum*	Electric Oil
Plantaginaceae	*Veronica* sp.	Veronica
Poaceae	*Cymbopogon citratus*	Lemongrass
	Zea mays	Corn Hair
Portulacaceae	*Portulaca pilosa*	Grown Love
Punicaceae	*Punica granatum*	Pomegranate
Rosaceae	*Malus domestica*	Apple
Rubiaceae	*Cinchona* sp.	Corner
	Coffea sp.	Coffee
	Euncarua tomentosa	Cat's Claw
	Scoparia dulcis	Broom
	Spermacoce verticillata	Button broom
	Uncaria tomentosa	Cat's Claw
Rutaceae	*Citrus aurantium*	Earth Orange
	Citrus limon	Lemon
	Citrus x *latifolia*	File
	Citrus x *sinensis*	Orange tree
	American Genipa	Jenipapo
	Ruta graveolens	Rue
Sapindaceae	*Talisia esculenta*	Bull's Eye
Solanaceae	*Lycopersicon esculentum*	Tomato
	Physalis sp.	Camapu
	Solanum melongena	Aubergine
Urticaceae	*Urtica* sp.	Nettle

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Verbanaceae	*Vitex agnus-castus*	Agnostical
Vitaceae	*Cissus sicyoides*	Insulin
Zingiberaceae	*Curcuma longa*	Saffron
	Zingiber officinale	Ginger

Source: Authors, 2025.

This species richness reflects not only Amazonian biodiversity, but also the deep traditional knowledge accumulated over generations about the medicinal use of these plants. Families such as Asteraceae, Lamiaceae, Fabaceae, and Rubiaceae stand out for the number of species mentioned, which is consistent with studies carried out in other regions of Brazil and the Amazon, where these families are often associated with medicinal use (Pereira; File; Souza, 2021).

The presence of widely known species, such as aloe vera, Cymbopogon citratus (lemongrass), and Mentha spicata (mint), demonstrates the spread of common herbal practices in urban and rural contexts. On the other hand, the inclusion of lesser-known species, such as Eleutherine bulbosa (marupazinho) and Plantonia insignis (bacuri), reinforces the uniqueness of local knowledge and its connection with the regional flora.

The most representative families were Lamiaceae, Fabaceae and Rutaceae, each with 159, 93 and 69 individuals registered, respectively (Figure 6).

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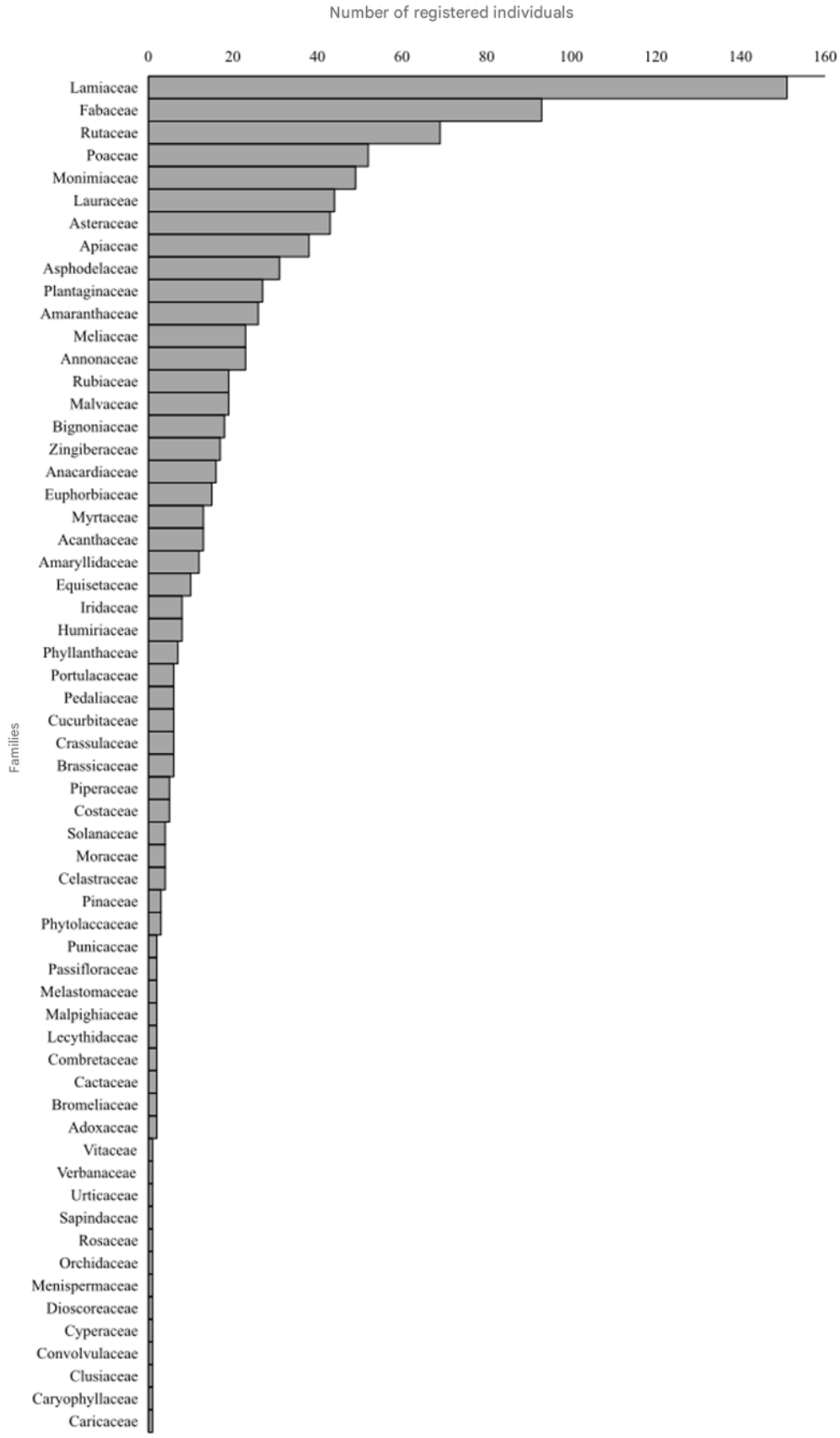
Figure 6. Number of plants cited per botanical family.



Source: Authors, 2025.

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Ethnobotanical studies point out that plants belonging to these families are often used due to their recognized herbal properties, including antimicrobial, anti-inflammatory and digestive activities, among others. In addition, research indicates that medicinal use is the main category of application when it comes to the study of populations located in urban centers or nearby rural communities, with these families being some of the most cited in ethnobotanical surveys due to their proven efficacy (Silva; Andrade, 2005).

A total of 63 purposes of use of medicinal plants were counted, the most cited being: use as a tranquilizer, cited 142 times; pain treatment, 110 times; and the treatment of inflammation, 73 times (Figure 7).

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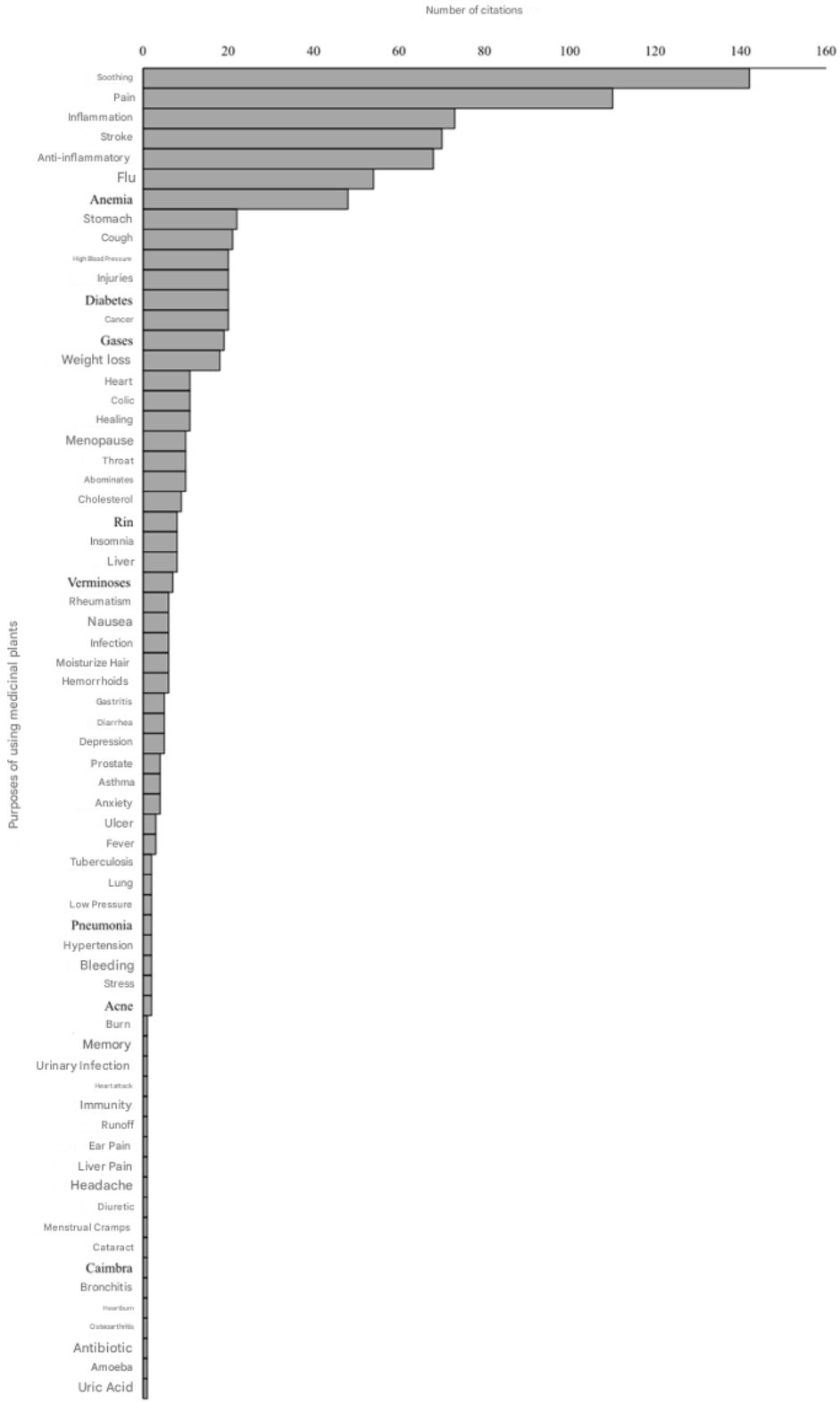
Figure 7. Purposes of use of medicinal plants.



Source: Authors, 2025.

The predominance of these categories suggests that folk medicine plays an essential role in the management of recurrent health conditions in the community,

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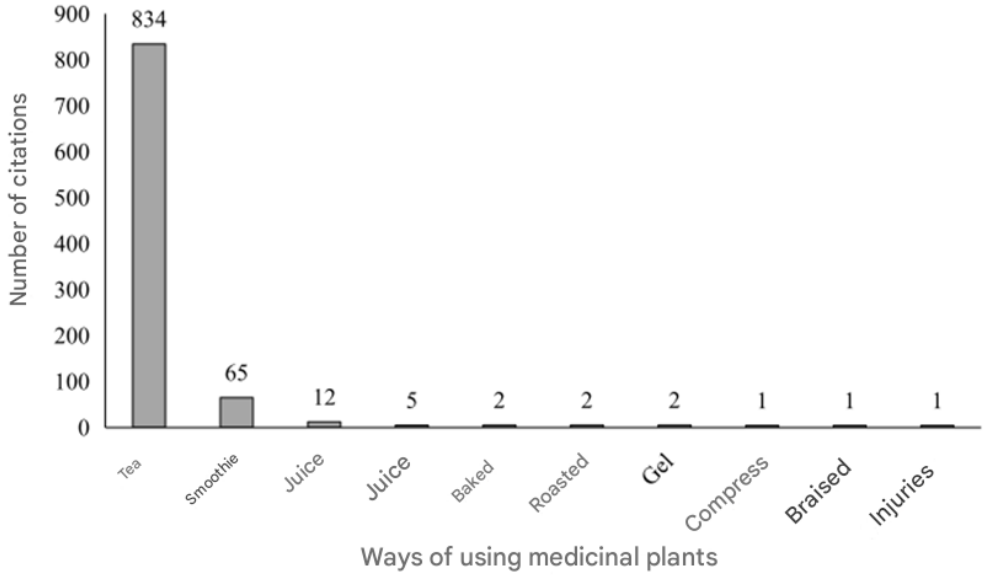
especially those related to the relief of physical and emotional symptoms. The use of these plants, however, depends on factors such as the correct identification of the species, knowledge of the part used, the method of preparation and the appropriate dose, combining the popular knowledge accumulated over generations with scientific evidence that validates their therapeutic properties (COLET *et al*., 2015).

The interviewees mentioned 10 different ways of using medicinal plants (Figure 8), which shows a diversified knowledge about their properties and methods of preparation. This empirical knowledge, transmitted over generations, is supported by modern phytotherapy, which, as pointed out by Colet *et al*. (2015), also recognizes the importance of variables such as temperature, infusion time, and part of the plant used in maximizing medicinal effects.

Figure 8. Ways of using medicinal plants.



Source: Authors, 2025.

The form of use with the highest number of citations was tea (834 times), the second most used form was shaken (65), followed by juice (12). 14 parts of the plants used by the interviewees were recorded (Figure 9). The most cited part was the leaf (581 times), followed by the bark (181) and the seed (59). The predominance of tea as the main form of consumption is directly related to its ease of preparation and the widespread belief that the extraction of bioactive compounds occurs more efficiently through infusion in hot water.

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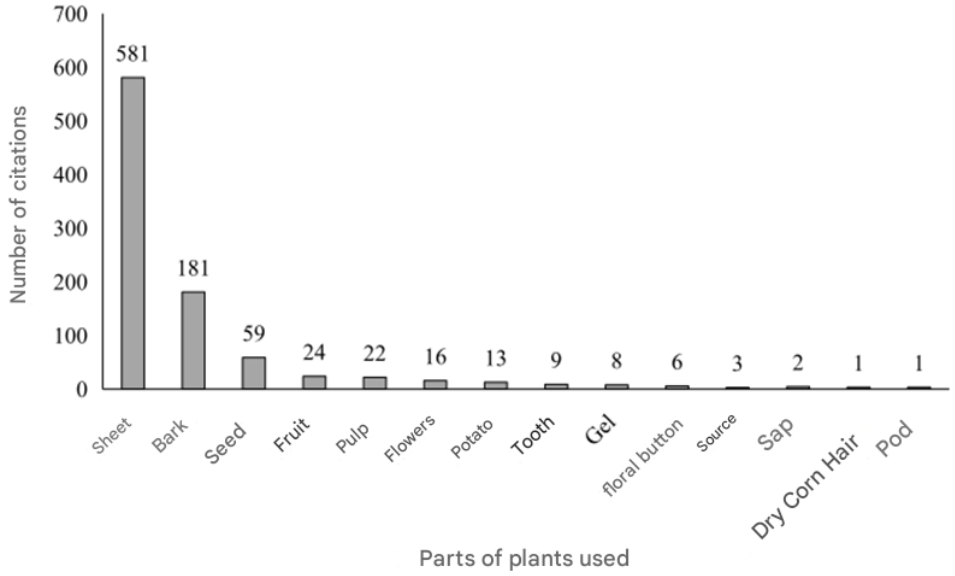
Figure 9. Parts of medicinal plants used.



Source: Authors, 2025.

CONCLUSION

Based on the objective of this study, which was to survey and document the species of medicinal plants used by urban communities in the municipality of Moju/PA, the research evidenced the strong connection between the population and traditional knowledge about phytotherapy. The identification of 149 species belonging to 60 botanical families demonstrates the richness of popular knowledge and the importance of natural medicine in the daily lives of residents. In addition, the results pointed out that the use of these plants is directly related to the intergenerational transmission of knowledge and socioeconomic factors, such as income and education, reinforcing their role not only in health, but also in the preservation of local culture.

The analysis of the practices of cultivation, preparation and use of plants showed that, in addition to being an accessible therapeutic resource, they are part of a system of knowledge that resists the modernization of medicine and the advance of pharmaceutical industrialization. The survey allowed the identification of the main diseases treated by these plants and the most used preparation methods, highlighting the predominance of the use of teas and infusions, which demonstrates the strong influence of tradition on the consumption of these species.

Community involvement was essential for the development of this study, enabling a deeper understanding of how traditional knowledge is acquired, shared, and preserved in the urban area of Moju. The valorization of this knowledge can contribute not only to its

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continuity, but also to the promotion of scientific studies that validate the efficacy and safety of these plants, strengthening their integration into public policies aimed at health and the environment.

In view of the findings, the need for future investigations that deepen the analysis of the chemical composition and medicinal properties of the identified species is reinforced, allowing their application in a safer and more effective way. In addition, the preservation and sustainable management of these plants must be encouraged to ensure that this natural heritage remains a viable alternative for the well-being of the population. Thus, this study contributes to the appreciation of traditional medicine and Amazonian biodiversity, reinforcing the importance of dialogue between popular knowledge and science in the construction of accessible and sustainable health practices.

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