



Ethnopharmacological Survey on the Role of Medicinal Plants in Guadeloupe from Infancy to Adolescence

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Abstract

Nowadays, it is easy and almost automatic to turn to industrial (commercial) drugs because they are easily accessible. However, we must not forget the great diversity of tropical medicinal plants that is available to everyone. To illustrate this aspect, we surveyed the students of the University of the Antilles (Campus de Fouillole, Guadeloupe) about their knowledge about the use of medicinal plants transmitted by their ancestors and whether it has lasted throughout the generations. The objective of this research is twofold, on the one hand, to value the local culture and flora and, on the other, to check the position of young people regarding the use of medicinal plants in their day-to-day life.

Keywords: Traditional medicine; Ethnopharmacology; Caribbean; Guadeloupe

Introduction

Guadeloupe is an archipelago located in the French Lesser Antilles, with a total area of 1,628 km². Bordered to the west by the Caribbean Sea and to the east by the Atlantic Ocean, Guadeloupe main islands are: Grande-Terre and Basse-Terre cut by an arm of the sea called Rivière salée, Marie-Galante, Les Saintes (Terre-de-Haut and Terre-de-bas) and the Désirade. The climate is tropical with two seasons (dry and wet). The archipelago has a population density of 240 inhabitants/km² for a population estimated at about 375,000 inhabitants in 2021 according to the latest census (INSEE).

Guadeloupe has a huge cultural and ethnic diversity (including, among others, Afro-Caribbeans, Europeans, Amerindians and Indians), so traditional medicines vary and so does the use of plants. The population of the Caribbean basin has a tradition of using herbal remedies to maintain general health and well-being, or to treat or prevent diseases [1-4]. This traditional medicine takes advantage of the extraordinary biodiversity advantages of the Caribbean islands, classified as one of the 34 global biodiversity

hotspots [5]. Our objective is to conduct a first exploration of the role of medicinal plants from childhood to adolescence on the Fouillole campus (University of Antilles). This preliminary assessment of the knowledge of the younger generation also allows us to understand if the knowledge about medicinal plants endures and is transmitted and if there is a revival of interest in medicinal plants and if new practices are carried out.

Methods

The applied protocol consisted of conducting a standard ethnopharmacological survey [4]. The first stage of the ethnopharmacological protocol is the field surveys, which are characterized by individual and structured interviews in which open and closed questions are asked through a questionnaire. Surveys can be of various types: through interviews (in this case) or by filling out questionnaires in person or by other means (computer, telephone, etc.).

The present survey was conducted at the University of the Antilles with students at the Fouillole campus (13 people in total). Respondents were selected randomly (trying not to have any demographic, ethnic or university education bias), simply taking into account the openness or availability of the interviewees. We collected qualitative and quantitative data that allow us a first global vision on our topic: the role of medicinal plants from childhood to adolescence. Therefore, we searched for the names of several plants used for general health (birth, childhood, schooling, examinations, etc.) and also for their well-being (headaches, digestive disorders, purging, refreshment, baths, etc.). In this way we cover the use of plants to heal health problems and the use of plants for non-physical ailments.

Results and Discussion

The first result (Table 1) refers to the uses of the species identified as useful from childhood to adolescence. Figure 1 shows that plants of the Asteraceae, Poaceae and Lamiaceae families

were most frequently cited by students on the Fouillole campus [6] and Table 1 presents their vernacular names in French and Creole. Indeed, in the Asteraceae family, the following species were the most frequently cited (Figure 2): “zèb à pic” (*Neurolaena lobata* (L.) Cass.) and chicory or “chikoré” (*Cichorium* sp.). Perhaps this popularity is due to the formulation of the Virapic® remedy (Phytobokaz® Laboratoy), which is known for its pharmacological properties [7]. Poaceae include citronella, “ti kann” or “sitwonnèl” (*Cymbopogon citratus* (DC.) Stapf), and “chiendent” (*Cynodon dactylon* (L.) Pers.). Two herbaceous plants with proven virtues that are also widely used on the island of Martinique [8]. And for the Lamiaceae, the “doliprann” (*Plectranthus barbatus* Andrews) and Rosemary or “romaren”(*Rosmarinus officinalis* L.). Two non-native/introduced species, which may illustrate the appropriation of phytotherapeutic knowledge from elsewhere, such as their use as anti-inflammatories in metropolitan France as well as in other Caribbean islands.

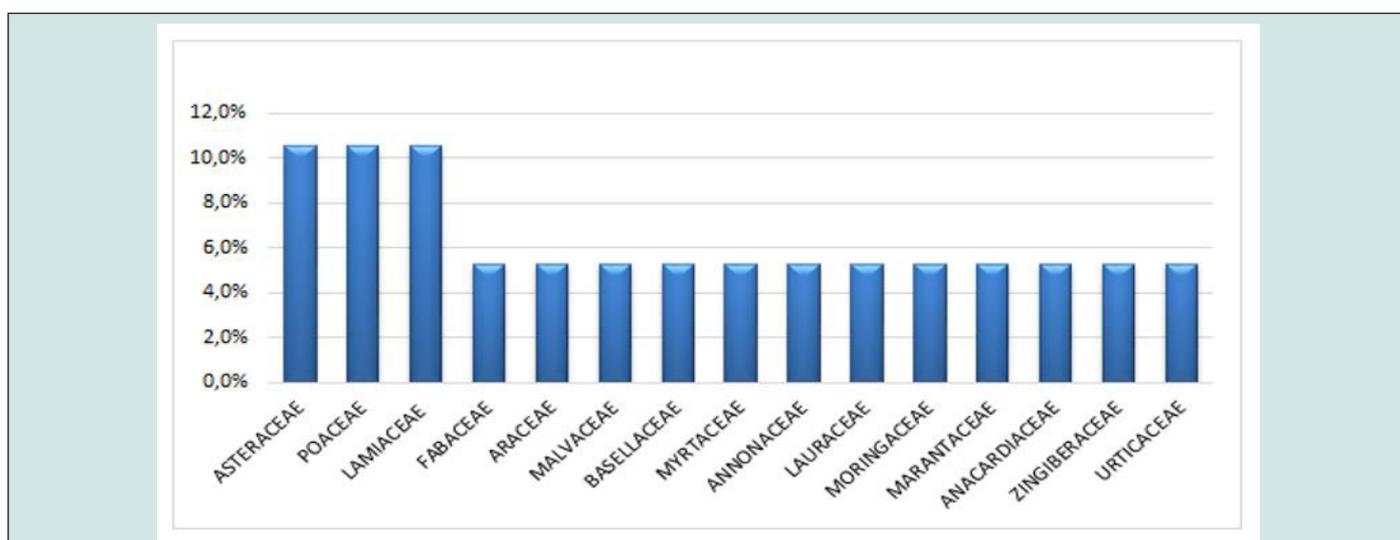


Figure 1: Cited species botanical families (19 species).

Table 1: Vernacular/scientific name traditional use.

Scientific Name	Vernacular Name (French/Creole)	Usage	Plant Part
<i>Annona muricata</i> L.	Corossol/kowosol	Relaxing	Leave
<i>Anredera vesicaria</i> (Lam.) C.F.Gaertn.	Glycérine/Glisérin	Dermatological	Leave
<i>Cinnamomum verum</i> J.Presl	Cannelle/Kannèl	Flu	Bark
<i>Cocos nucifera</i> L.	Coco	Purifying	Water
<i>Cymbopogon citratus</i> (DC.) Stapf	Citronnelle,Sitwonnèl	Flu and headache	Leave
<i>Cynodon dactylon</i> (L.) Pers.	Chiendent,Chiendan	Purifying and headache	Leave and stem
<i>Moringa oleifera</i> Lam.	Moringa/Quatre cans/Mandékilè/Katkan	Food supplements	Leave and seed
<i>Rosmarinus officinalis</i> L.	Romarin	Purifying and contusion	Leave and stem
<i>Senna bicapsularis</i> (L.) Roxb.	Soumake	Dermatological	
<i>Maranta arundinacea</i> L.	Dictame	Food supplement	Root

<i>Hibiscus sp.</i>	Hibiscus	Purifying	
<i>Psidium guajava L.</i>	Goyave	Purifying	Leave
<i>Cichorium sp.</i>	Chicorée bleue	Infection	Leave
<i>Origanum majorana L.</i>	Marjolaine	Digestive issues	Leave
<i>Neurolaena lobata (L.) Cass.</i>	Zeb à pic	Digestive issues and flu	Leave and stem
<i>Plectranthus barbatus Andrews</i>	Doliprane	Flu	Leave
<i>Mangifera indica L.</i>	Manguier	Purifying	Leave
<i>Alpinia zerumbet (Pers.) B.L.Burtt & R.M.Sm.</i>	Atoumo	Flu	Leave

The second result is an analysis of the target audience, the students, we worked with a small staff of 13 people. They averaged 22 years of age and were almost equally represented, with seven young women and six young men (Figures 3 & 4). Following our survey, we found in particular that the transmission is mostly within family (93%) compared to outsiders (6%) (Figure 5). Maternal ancestry (68%) transmits most of the knowledge about medicinal plants compared to paternal lineage (16%), which is consistent

with previous studies by Picking and collaborators [9]. As with the work done by Drane, in Martinique, where they also show that with the passage of time “transmission is lost” [10], this evidence was also highlighted according to the participants of the present survey. However, despite this trend of loss of knowledge about medicinal plants, the young people interviewed showed a desire to continue acquiring knowledge about the use of medicinal plants (Authors’ observation).

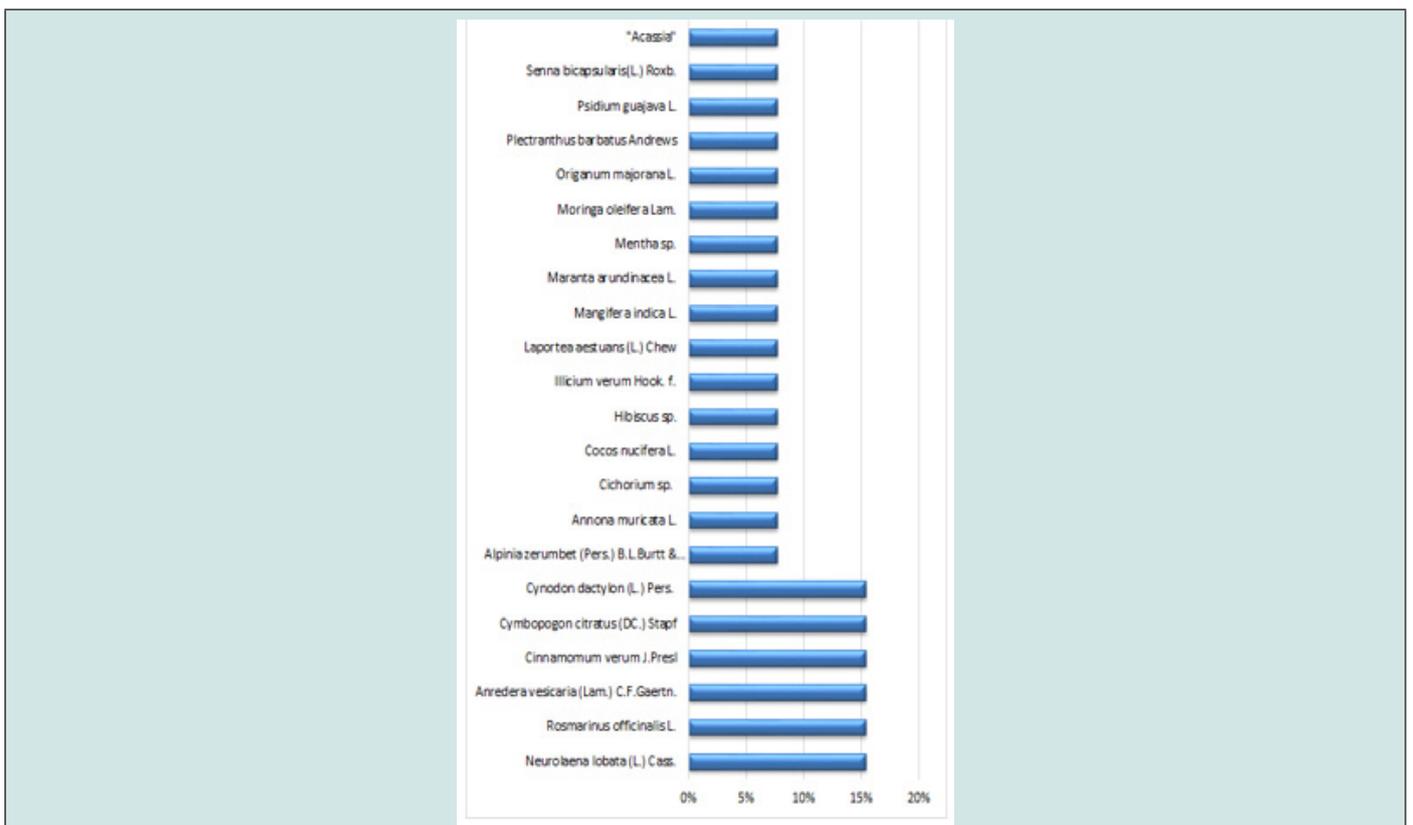


Figure 2: Cited species proportions.

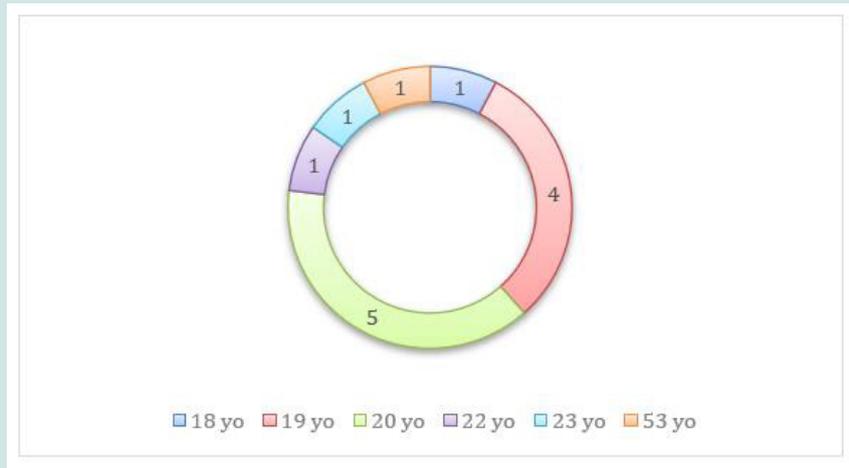


Figure 3: Participants age.

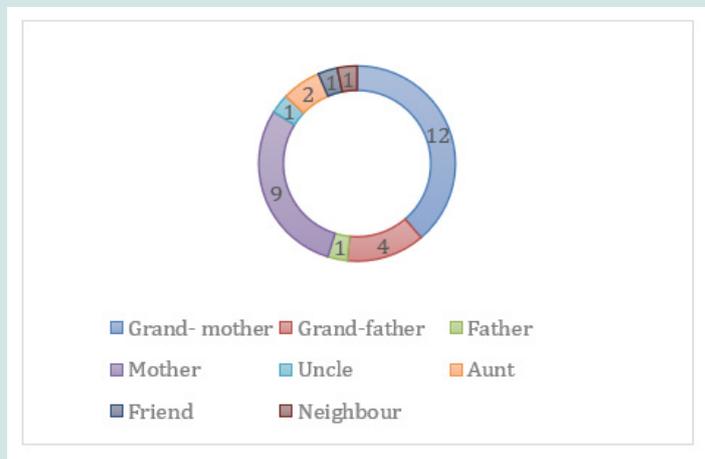


Figure 4: Information's sources.

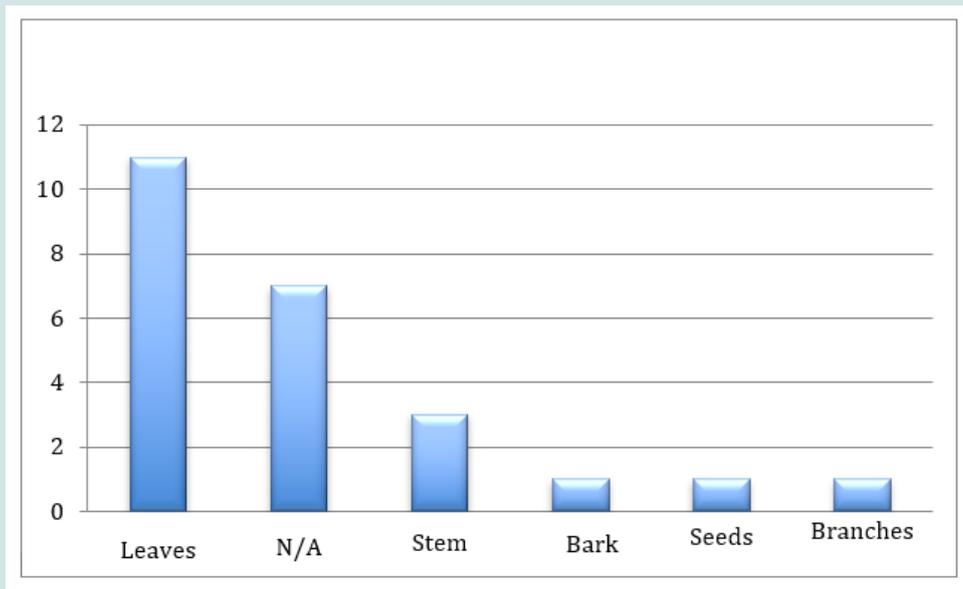


Figure 5: Part of the plant cited as useful in preparation by students.

Most of the students mainly cited the use of plant leaves (11), as recorded in an ethnopharmacological study conducted on the islands of Les Saintes [4] (part of the Guadeloupe archipelago). This would imply that these young people believe that the active ingredients are mainly found in the leaves (Figure 5). However, we know that leaves are an important cultural resource in Caribbean society [11]. But perhaps also that transmission has been restricted to formulations based on the individual leaves of the plant, supporting a loss of diversity of knowledge related to the traditional uses of other parts of plants (flowers, roots, fruits, etc.).

The uses of plants, as illustrated in Figure 6, are diverse. The most cited are for indigestion (5), headaches (4) and the

“cleaning” of the organism (4), however the use for the treatment of psychological problems (non-physical, spiritual or other ailments) was also recorded (Figure 7). Infusion is by far the most used preparation (13), commonly called tea, tisane or “tizann” (Figure 8). As a result, plants are used more by mouth (20) than by dermal application (1) or bath (3) (Figure 9). These same observations can be found in the book “Les savoirs naturalistes populaires de Guadeloupe” [12]. It is worth noting that posology is a very tricky and potentially dangerous point, since doses are not objectively quantified, regardless of the student interviewed (Figure 10). Respondents use for their preparations “a handful”, “3 leaves” or “1 tablespoon”. In addition, most of the students remain cautious with respect to the doses of the plants [13-15].

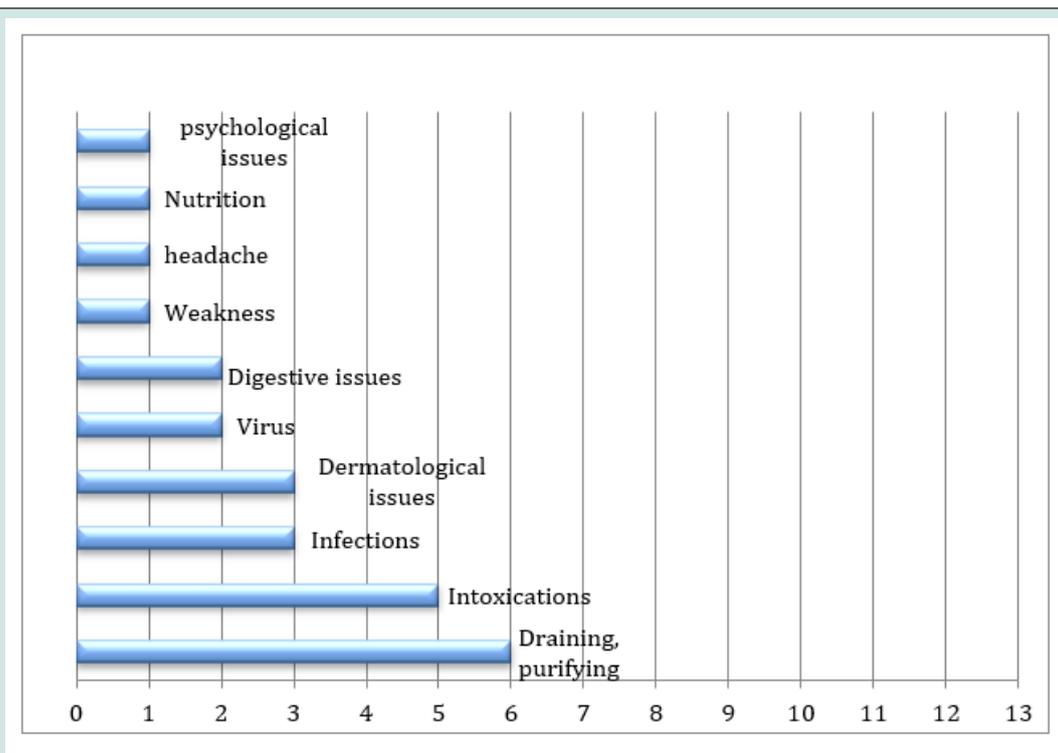


Figure 6: Pharmacological functions of plants.

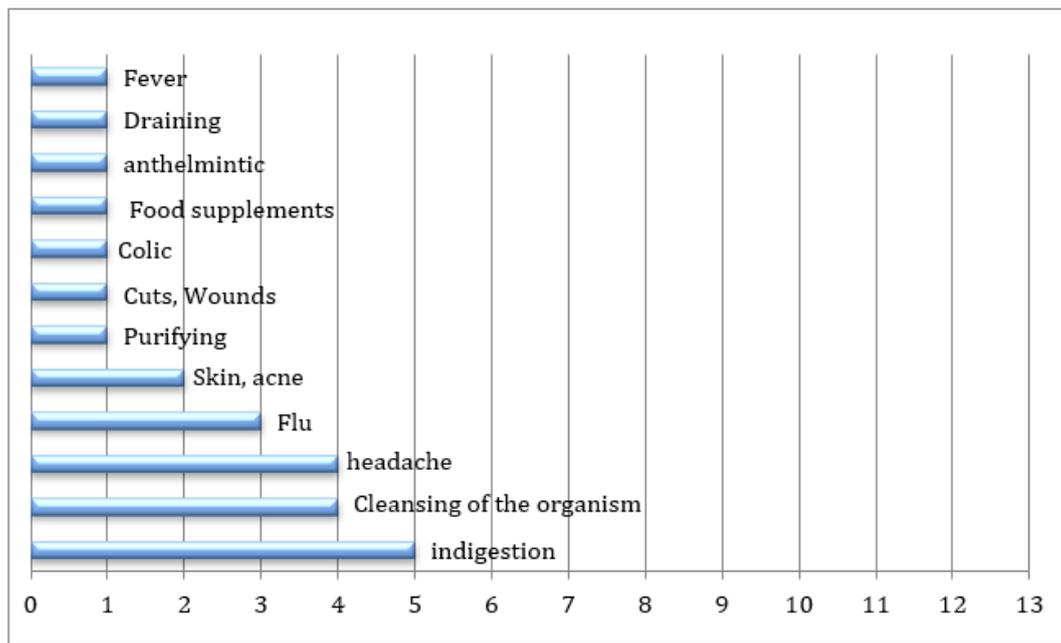


Figure 7: Plants usage.

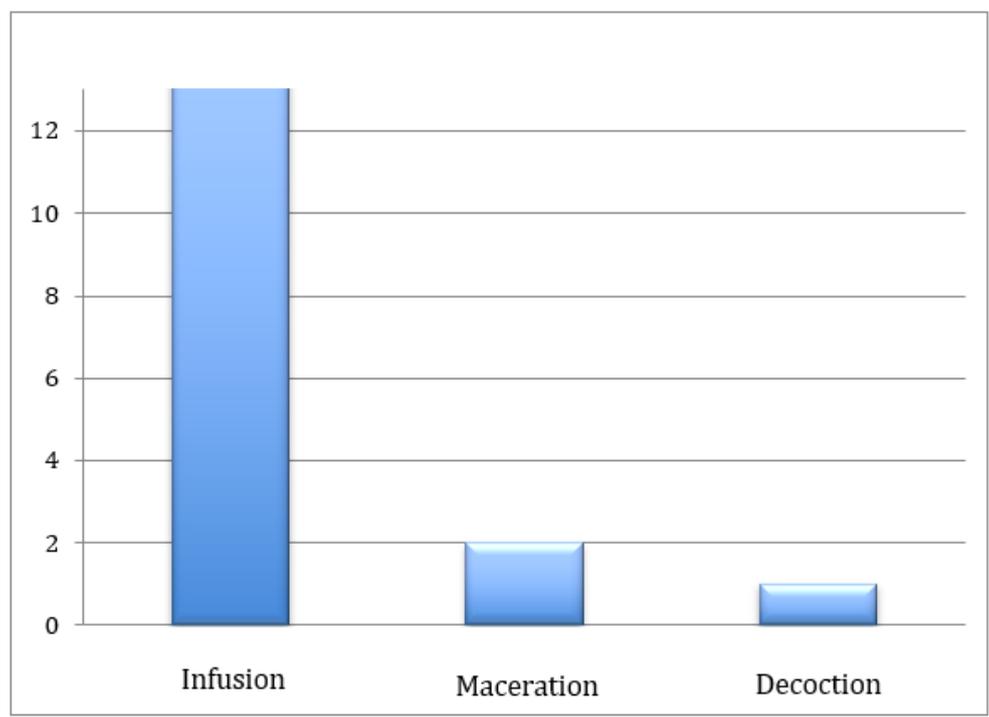


Figure 8: Modes of preparation.

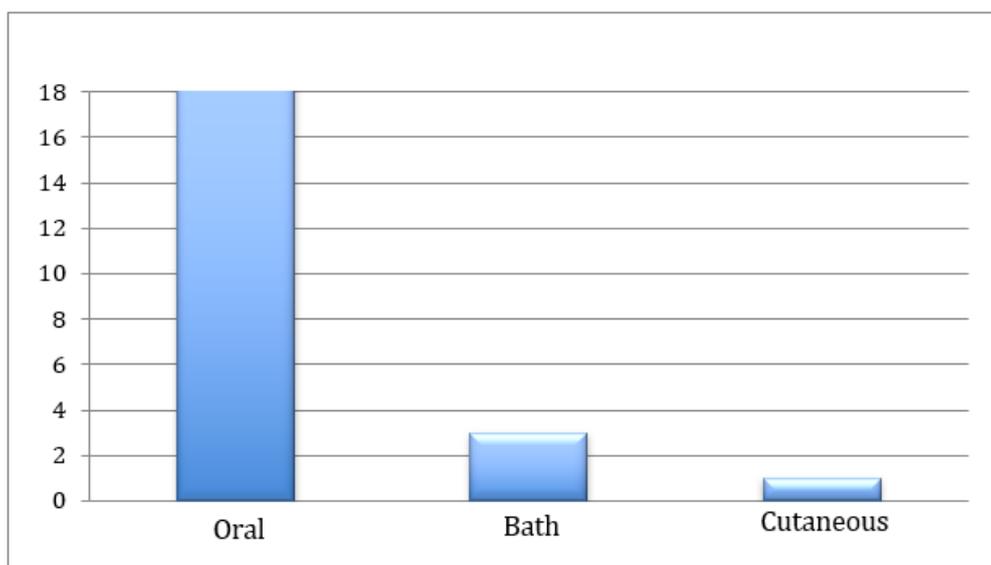


Figure 9: Route of administration.

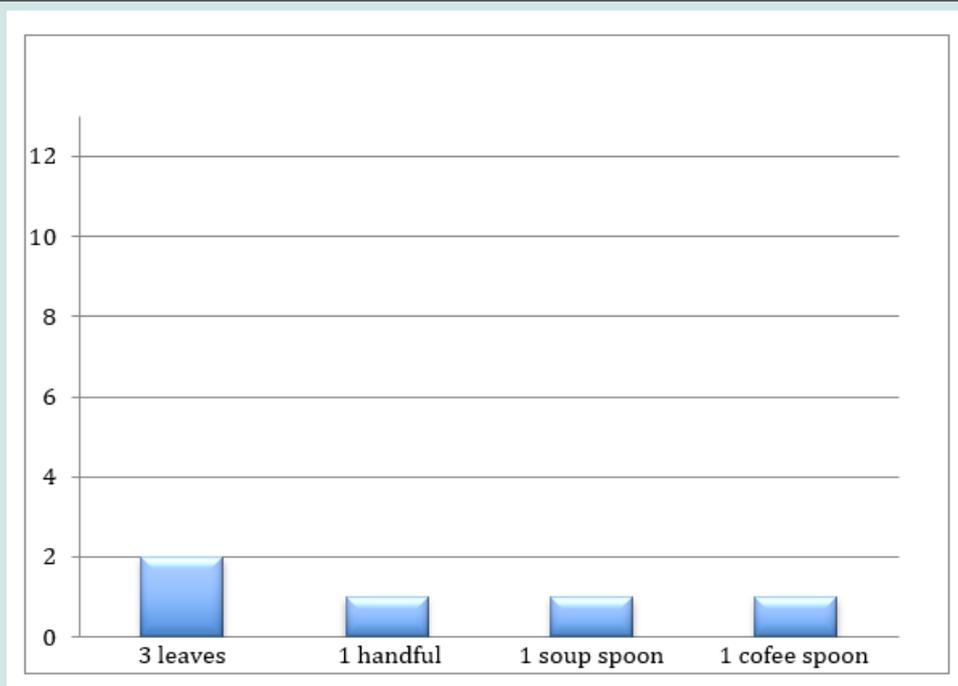


Figure 10: Posology.

Conclusions

As a conclusion of this study we observed that :

- Generally the transmission of knowledge is familiar and comes from the mother's side.
- The three main families most cited are: Asteraceae, Poaceae and Lamiaceae.
- The most frequent applications are: Digestive problems, headaches, depurative and dermatological problems. The survey also reports the use of plants for non-physical ailments, but with a lower incidence.
- The most used part of the plant is the leaf prepared as an infusion (oral administration).
- Dosage is approximate.

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