ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 10, Issue, 11, pp.75161-75169, November, 2018

DOI: https://doi.org/10.24941/ijcr.33000.11.2018

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

INVENTORY AND MAPPING OF SOME PLANTS USED FOR CHILDREN UNDER 5 YEARS IN NIGER: CASE OF THE DEPARTMENT OF MAYAHI

[1,*]Sabo Haoua Seini, [1]Aminou Illia Mama Nafiou, [2]Bako Aminatou Maazou, [1]Hassimi Sadou, [3]Amoukou Ibrahim, [1]Mousbahou Malam Alma, [4]Ramatou Seini Sidikou, [4]Mahamane Saadou and [5]Maman Moussa Ramatou

[1,*]Head of the Quality, Health and Food Safety, Study and Improvement of Traditional Processes Department of Chemistry, Faculty of Science and Technology, Abdou Moumouni University of Niamey, Niger
[1]Department of Chemistry, Faculty of Science and Technology, Abdou Moumouni University of Niamey
[2]Department of Applied Biological Sciences, Faculty of Health Sciences, Abdou Moumouni University of Niamey
[3]Department of Crop Production, Faculty of Agronomy, Abdou Moumouni University of Niamey
[4]Department of Biology, Faculty of Science and Technology, Abdou Moumouni University of Niamey
[5]Nutritionist, Institute of Public Health, Niamey

ARTICLE INFO

Article History:
Received 20th August, 2018
Received in revised form
12th September, 2018
Accepted 25th October, 2018
Published online 29th November, 2018

Key Words:
Inventory, Plants, Mapping, Undernutrition, Children, Niger.

ABSTRACT

Locally in the context of care and prevention of malnutrition, in Niger, communities use plants. The general objective aimed at through this study is to inventory and ofto map the plants used in children under 5 in the Mayahi department of Niger. To do this, an ethnobotanical survey was carried out on 100 women, mothers / grandmothers aged 35 or older and 23 traditional / retailers, all over 50 years of age. This study shows that 15 families of plants used left century in 23 genera and 24 species have been recorded. These plants are used either to treat children with diarrhea or to stimulate children 's appetite for better growth. The most commonly used is the family of Euphorbiaceae (4 species) with a proportion of 15 4%, followed by the family of Mimosaceae (3 species) and Caesalpiniaceae (3species) with a proportion of 11.5% each. The bark is the most used part (46.4%).The most used form is the plant powder (70.9%).Note that the use of these geographical map your differs from one municipality to another. The diversity of properties and indications, the various organs used as well as the methods of preparation and administration, testify to a good knowledge of the plant diversity of Tradipraticiens and mothers of children. However, biological and chemical tests will verify the veracity of the therapeutic indications received for an extension as an alternative for the prevention of moderate acute malnutrition in children under 5 years of age .

Citation: AMINOU ILLIA Maman Nafiou, SABO Haoua SEINI, ALFA Keita, BAKO Aminatou MAAZOU, HASSIMI Sadou et al. **2018.** "Inventory and mapping of some plants used for children under 5 years in Niger: Case of the department of Mayahi", *International Journal of Current Research*, 10, (11), 75161-75169.

INTRODUCTION

Apart from cultivated plants, several wild or domestic plants, forest or ruderal are of great cultural importance and have a high economic potential for food and care. The use of plants for therapeutic purposes is reported in ancient Arabic, Chinese, Egyptian, Hindu, Greek, and Roman literature (Anonymous, 1974). In Africa, the therapeutic power of plants was known to our ancestors and our parents empirically (Nacoulma, 1996). Moreover and despite the advent of generic drugs, many treatments remain financially still inaccessible to economically deprived populations. Thus they continue to turn to nature for herbal remedies. However, there is little work on plants used in child care.

Corresponding author: **Sabo Haoua Seini,**
Head of the Quality, Health and Food Safety, Study and Improvement of Traditional Processes Department of Chemistry, Faculty of Science and Technology, Abdou Moumouni University of Niamey, Niger.

In this respect, one can cite the work of Flahaut (1999) on the care of the mother-child couple, Burgund (2002) on methods of reinforcement of natural defenses in the infant and those of Nana- Sanon (2005) making the inventory of medicinal plants used in the care of children in the commune of Ouagadougou. However, it is certain that in many places in Niger, Non-Timber Forest Products have a much higher value than wood. Since the immediate causes of MAM are diseases and inadequate nutrition Several studies have reported more medicinal plants used in Niger (Adjanohoun et al, 1980, Wezel, 2001), however, we now see an abundance of medicinal plants. use of plants as a dietary supplement or to treat other diseases especially in children under 5 years of age. This practice, highlighting the nutritional status of children, caught our attention and was the subject of this study. Its objective is to inventory these plants, to characterize them and

to map them while highlighting their therapeutic virtues. This will allow a better knowledge of these plants and their uses.

MATERIALS AND METHODS

Site and duration of study: The study was carried out in five communes in the 8 that counts the department of Mayahi to know : Issawane, Kanembakaché, urban Mayahi, Serkin Haoussa and Tchaké. These communes were chosen so as to represent geographically the said department. The ethnobotanical survey was conducted between July and August 2017.

Sampling: This is a random sample taking into account the knowledge of the plants used in the feeding of children in the municipality. It consisted of 100 women, mothers / grandmothers aged 35 and over, and 23 traditional practitioners / resellers, all over 50 years of age.

Primary data collection

The data collection was done in two stages namely:

First stage: it was first surveyed based on a questionnaire, the vernacular names of the plants, the parts used, the reasons for use, the method of preparation, the mode of administration and the side effect in the main targets. This allowed us to inventory the plants used in food in children under 5 years.

Second step: it consisted in the collection of samples of the plant parts used, this phase was carried out initially in the five commune markets, then in the bush for the green samples, they were dried. Each sample collected was bandaged by Scott, which has the vernacular name. They were transported to Niamey and stored in the plant production laboratory of the Faculty of Agronomy of Abdou Moumouni University.

Secondary data collections: The secondary data collection was carried out in the library of the Faculty of Science and Technology, Faculty of Agronomy of the UAM, on the net. This data consists of works from books, dissertations, scientific articles, theses and any other document that deals with the same theme. They allowed us first of all to determine the scientific names of the plants, the family, the various uses, the mode of administration, the side effects.

Data analysis method: The information collected was analyzed and entered into the SPSS software version 20. This data was analyzed using the same SPSS 20 software. ;Excel 2010 has been used to edit figures and Word 2010 for writing.

RESULTS

Floristic wealth used in children under 5 years: Through this study, there were 15 families of plants used divided into 23 genera and 24 species. The most commonly used is the family Euphorbiaceae (4 species) with a proportion of 15. 4%, followed by the family of Mimosaceae (3 species) and Caesalpiniaceae (3 species) with a proportion of 11. 5% each.

Used parts: Bark is the most used part (46. 4%), followed by the whole plant (31. 1%) and roots (14. 6%). Flowers (0. 7%) and fruits (0. 7%) are the least used.

State of the plant: All plants are used in the dry state (photo A and B)

Different uses of the plant: The primary use is the treatment of diseases such as diarrhea (59. 2%), vomiting (1. 5%), other diseases (3. 1%). It should be noted that 36. 2% of the plants are used for the growth of the child by giving him an appetite or making him fat.

Form of plant use: The medicinal plants are usedin large part alone without partnership (54. 16%) in contrast to plants administered to children for growth that are used in combination / only with other plants or other materials (33. 3%). Only 12. 5% of plants are used only in combination with other plants or minerals.

Form of plant use: Several shapesare used to know : powder (70. 8%), herbal tea (28. 4%) and others (0. 8%).

Method of preparation: The result is several preparation methods, of which the powdering of plants in the first position (70. 9%). The infusion comes secondarily with 24. 2%. The least used modes are maceration and decoction.

Doses used and frequency of use: The doses of the plants used are the pinches for the plants transformed into powder and the pump for the maceration, infusion and decoction. Various frequencies of use (figure) were found, the products prepared are used all day with 74. 8% ;3 times a day (18. 5%) and finally 2 times a day (6%).

Mapping of plants used in children under 5 years: It appears from this mapping (Table XX below) five (5) plants are the most used, because they are used in at least four (4) common on the five (5) surveyed. It is *Acacianilotica*, *Schwenckiaamericana*, *Commiforaafricana*, *Guierasenegalensis* and *Sesbaniapachycarpa*. With regard to the first three plants, the reasons for use (against diarrhea and for the growth of the child), the methods of preparation, the parts used and the dosage remain the same in the four communes of the five surveyed. However, for the other two plants, the use differs from one commune to another. With regard to Table XXI, *theAdansoniadigitata* is more used in the North (Tchaké commune), in the East (Issawane commune) and in the center (Mayahi urban commune). As for *Lanneafruiticosa*, its use extends over the whole southern band (commune of Sherkin Hausa and Kanembakaché) and in the center (urban commune of Mayahi).

We notice from this painting XXII, we notice that some plants are specific to a commune. *Euphorbiabalsamifera* is only used in the Mayahi Commune. *Faidherbiaalbida* owes its use to the South-East (commune of Kanembakaché). In the East Band (Issawane), it's *Gisekiapharnacioides* that is used. *Annonasenegalensis* and *Diospyrosmespiliformis* are plants specifically used in the Southwest (Sherkin Hausa). Table XXIII shows that other plants such as: *Bauhiniarufescens*, *Stereospermumkunthianum*, *Aervajavanica*, *Cleomeviscosa* are used in the northern part (Tchaké) and East (Issawane). As for *Ficusplatyphylla* and *Chrozophorabrochiana* in the center (urban commune of Mayahi) and east-south (Kanembakashé). With regard to *Prosopisafricana* and *Combretumglutinosum*, they are specifically used in the southern part (commune of Kanembakashé and Sherkin Hausa). *Stylosanthesfanticosa* is used in the East (Issawane) and Southeast (Kanembakashé) bands.

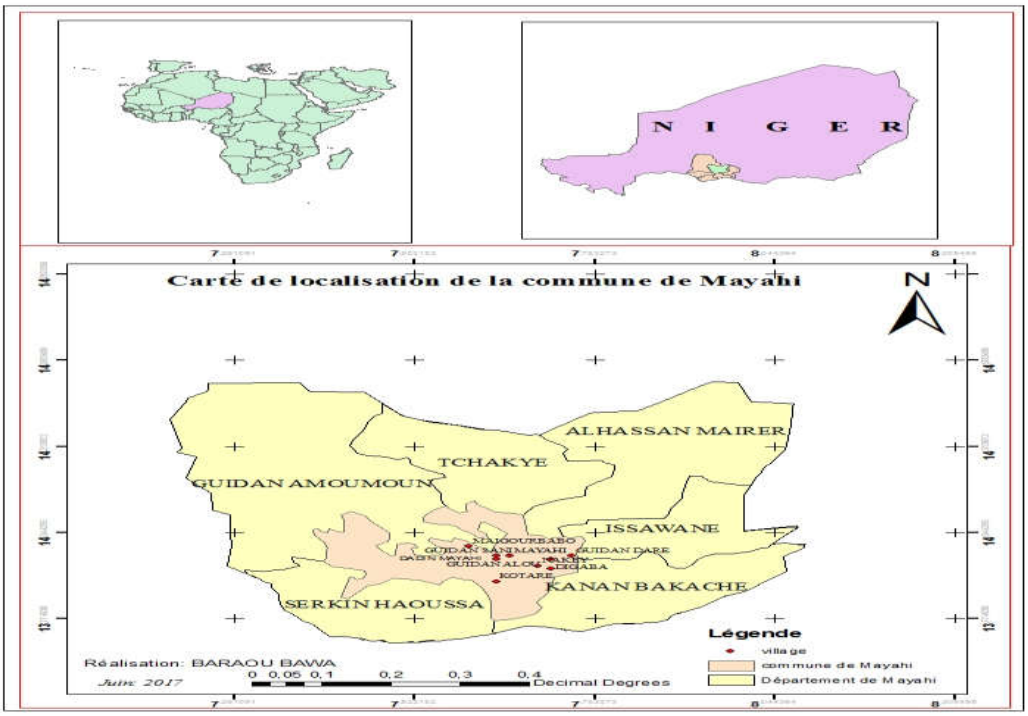


Figure 1. Location of the study area

Photo 1. Plant identification

Photo 2. Identified Plants

		
Euphorbiabalsamifera Ait	*Acacia nilotica*	***Chrozophorabrocchiana Vis***
		
Comniphoraafricana	***Bauhinia rufescence***	***Merremiatridentata***

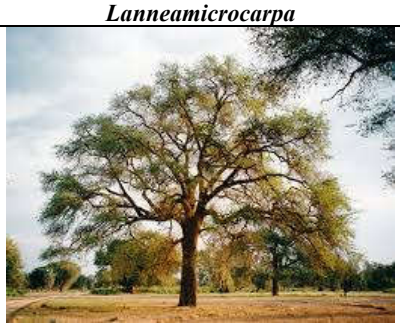
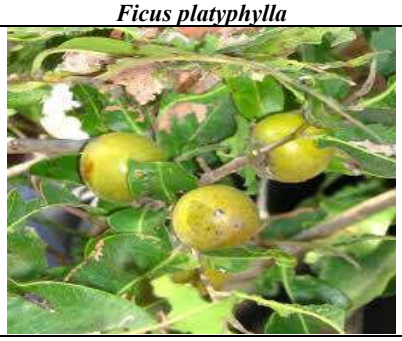
		
Lanneamicrocarpa	*Gisekiapharnacioides*	*Ficus platyphylla*
		
Faidherbiaalbida	*Annonasenegalensis*	*Diospyrosmespiliformis*
		
Stylosanthesfanticosa	*Cassia occidentalis*	*Prosopis africana*
		
Adansoniadigitata	*Guierasenegalensis*	*Stereospermumkunthianum*
		
Aervajavanica	*Detariummicrocarpa*	*Sesbania pachycarpa*
		
Cléomeviscosa	*Combretumglutinosum*	*Lanneafruiticosa*

Table 1. Plants used in 4communes / 5

Family	Scientificname	Vernacularname	Commons	Reason for use	Method of preparation	Part used	Dosage
Mimosaceae	*Acacianilotica(L.)Willd*	Bagaroua (Hausa)	Issawane Kanembakache Sherkin HaoussaTchake	againstdiarrhea	Turn into powder to season the dishes	Bark	A few pinches (depending on age)
Solanaceae	*SchwenckiaamericanaL.*	Dandana (Hausa)	Issawane Mayahi Sherkin HaoussaTchake	For the growth of the child	Infusion (in combination with peanut oil, some millet seeds and natron)	Plant	Drink a few sips
Burseraceae	*Commiforaafricana(A.Rich)*	Dashi (Hausa)	Issawane Mayahi Sherkin Haoussa Kanembakaché	For the growth of the child	Cook in the oil then dried and transformed into powder to season the dishes	Bark	A few pinches (depending on age)
combretaceae	*Guierasenegalensis(JFGmel)*	Sabara (Hausa)	Issawane	C. diarrhea	Trans.powdered	Root	Qlq.pincées
			Mayahi	Growthenft	Trans.powdered	Flower	
			Sherkin Haoussa	C. diarrhea	Infusion	Root	Qlq.pincées
			Tchaké	C. diarrhea	Trans.powdered	Root	Qlq.pincées
fabaceae	*SesbaniapachycarpaDC.*	Tchanthankoniga(Hausa)	Issawane				
			Mayahi	C. diarrhea	Trans.powdered	Plant	Qlq.pincées
			Sherkin Haoussa	Growthenft	Fry in oil, and trans .In powder	Plant	Qlq.pincées
			Tchaké	C. diarrhea	C. diarrhea	Root	

Table 2. Plants used in 3communes / 5

Family	Scientificname	Vernacularname	Commons	Reason for use	Method of preparation	Part used	Dosage
Bombacaceae	*AdansoniadigitataL.*	Kouka (Hausa)	Issawane	againstdiarrhea	Infusion (in combination with natron)	Bark	Drink a few sips
			Tchake Mayahi	For growth	Powdered		Some.plucked
Anacardiaceae	*Lanneafruiticosa(Hochst.exA. rich)*	Farou (Hausa)	Mayahi Sherkin Haoussa Kanembakaché	againstdiarrhea	Powdered	Bark	Qlq.pincées

Table 3. Plants used in a municipality / 5

Family	Scientificname	Vernacularname	Commons	Reason for use	Method of preparation	Part used	Dosage
Euphorbiaceae	*EuphorbiabalsamiferaAit.*	Agoua (Hausa)	Mayahi	For the growth of the child	Powderingafterdrying	Root	Qlq.pincées
Mimosaceae	*FaidherbiaalbidaDel.*	Gao (Hausa)	Kanembakaché	Againstdiarrhea	Powderingafterdrying	Bark	Qlq.pincées
molluginaceae	*GisekiapharnacioidesL.,*	Gadonmaciji (Hausa)	Issawane	For the growth of the child	Powderingafterdrying	Plant	Qlq.pincées
Annonaceae	*AnnonasenegalensisPers.*	God -da (Hausa)	Sherkin Haoussa	Againstdiarrhea	Maceration	Bark	Drink a few sips
Ebenaceae	*Diospyrosmespiliformis*	Kagna (Hausa)		Againstdiarrhea	Powderingafterdrying	Bark	Qlq.pincées

Table 4. Plants used in 2communes / 5

Family	Scientificname	Vernacularname	Commons	Reason for use	Method of preparation	Part used	Dosage
Caesalpiniaceae	*BauhiniarufescensLam.*	Dirgua(Hausa)	Issawane Tchake	againstdiarrhea	Turnintopowder	Leaves, bark	Qlq.pincées
Bignoniaceae	*StereospermumkunthianumCham*	Sansamé(shrugged)	Issawane Tchake	For the growth of the child	Powder, associatedwith millet	Bark	Qlq.pincées
Amaranthaceae	*AervaVarjavanica.*	Taringuida(Hausa)	Issawane Tchake	For the growth of the child	Turnintopowder	Plant	Qlq.pincées
Fabaceae	*Stylosanthesfruticosa(Retz.)*	Kanbolinshaho(Hausa)	IssawaneKanembakaché	Againstdiarrhea	Turnintopowder	Plant	Qlq.pincées
Euphorbiaceae	*ChrozophorabrochianaVis.*	Damegui(Hausa)	MayahiKanembakaché	Againstdiarrhea	Infusion (association with natron)	Rootleaves	Drink a few sips
Capparidaceae	*CleomeviscosaL.*	Tsintsiyarmahalba	Issawane Tchake	For the growth of the child	Infusion (put sugar)	Root and leaves	Drink a few sips
Convolvulaceae	*MerremiatridentataVar.*	Djimpiriri	Mayahi	For the growth of the child	Infusion	Root	Drink a few sips
			Sherkin Haoussa		Trans.In powder		Qlq.pincées
Moraceae	*FicusplatyphyllaDel.*	Gamdji(Hausa)	MayahiKanembakaché	Child'sgrowth	Turnintopowder	Bark	
				Againstdiarrhea			Qlq.pincées
Mimosaceae	*Prosopisafricana(Guill&Perr.)*	Kirya(Hausa)	Sherkin HaoussaKanembakaché	For the growth of the child	Turnintopowder	Bark	Qlq.pincées
combretaceae	*CombretumglutinosumPerr.*	Taramnia(Hausa)	Sherkin Haoussa Kanembakaché	Againstdiarrhea	Turnintopowder	Bark	Qlq.pincées

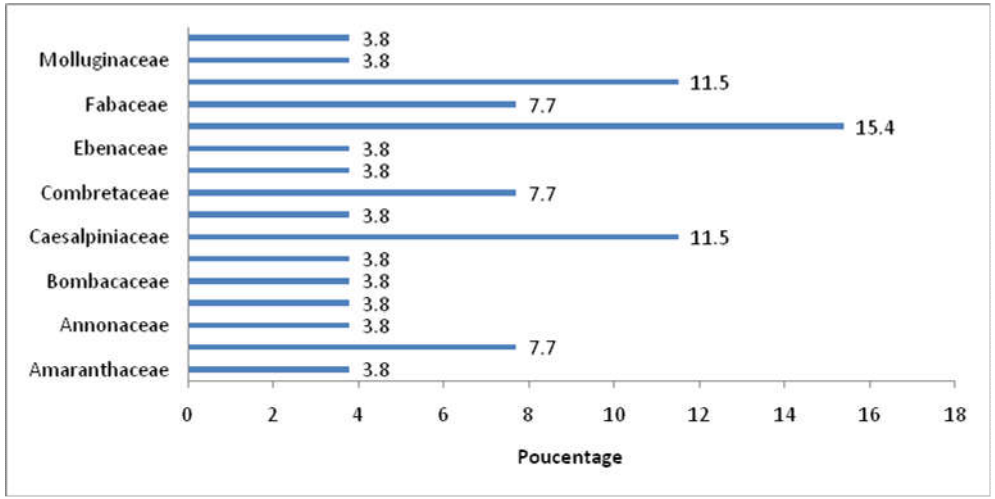


Figure 2. Floristic wealth of the department of Mayahi

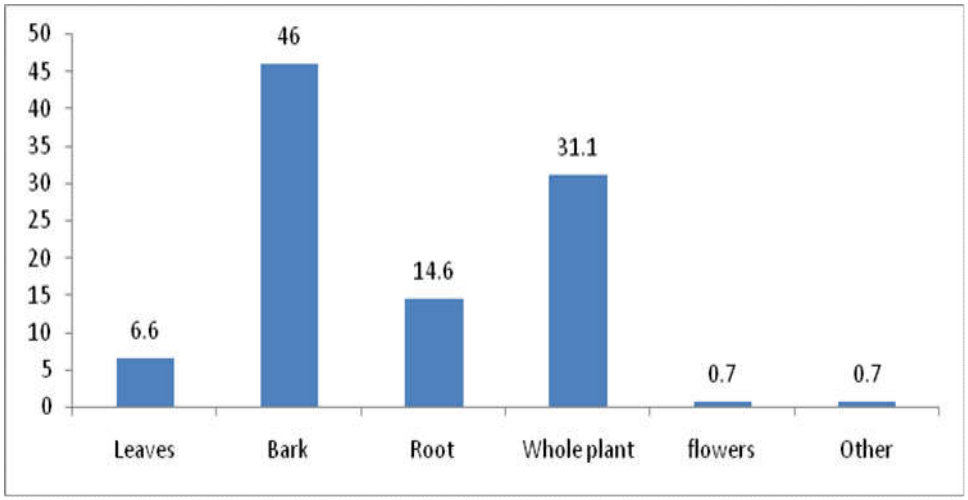


Figure 3. Parts of the plants used

Photo 3. Traditional plant market in Issawane (Mayahi)

Photo 4. Traditional plant market in Sherkin Haoussa (Mayahi)

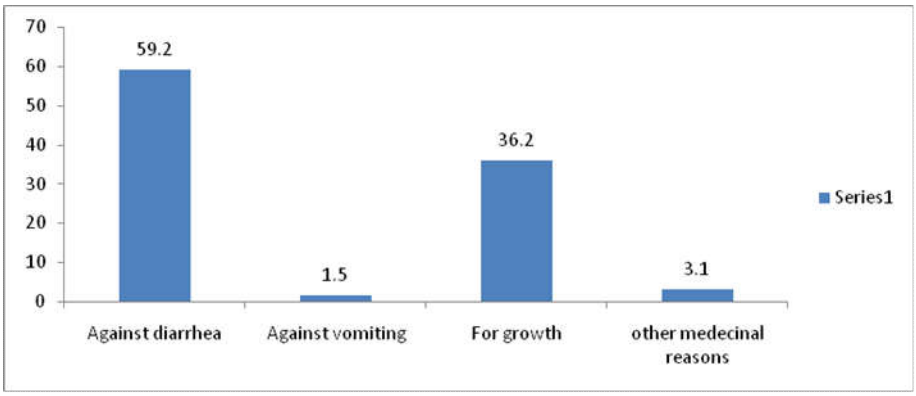


Figure 4. Reasons for using plants

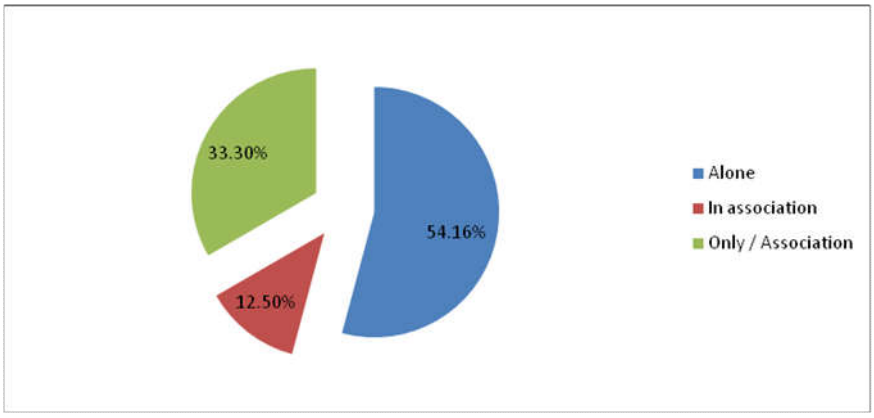


Figure 5. Forms of plant use

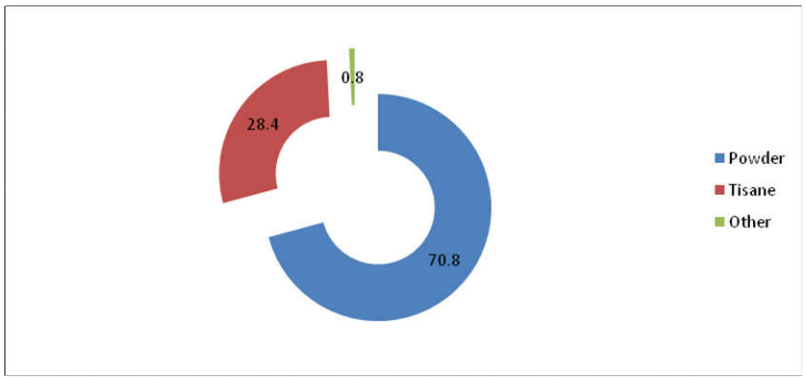


Figure 6. Forms of plant use

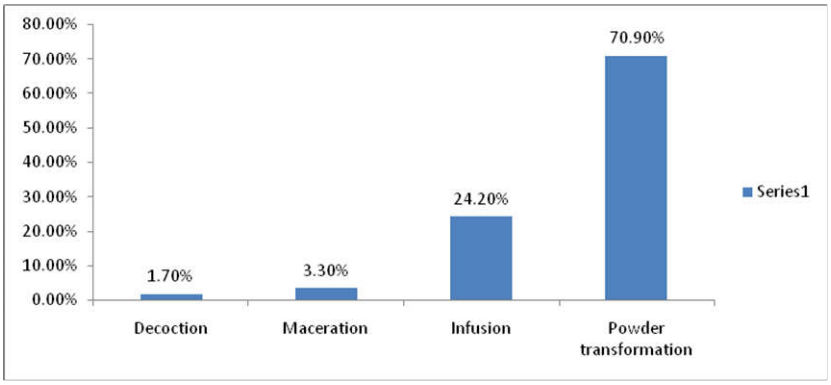


Figure 7. Different ways of preparation

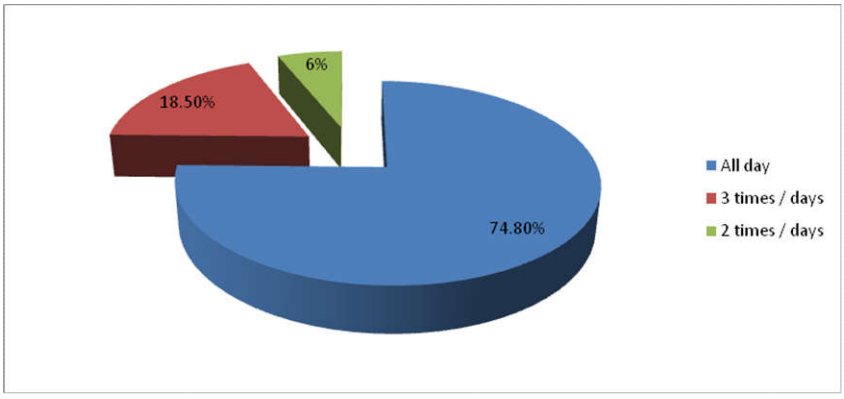


Figure 8. Doses used

With regard to *Merremiatridentata*, its use is based in the southwestern part (Sherkin Hausa) and in the center (Mayahi urban community).

DISCUSSION

In Africa in general and in Niger in particular, the population uses various plant species in food and in the fight against certain diseases such as diarrhea. They are an alternative of resilience, as the majority of families do not have access to the health center and adequate food. It remains nonetheless in the department of Mayahi with 24 species used. These results are similar to those obtained by Dibong et al. (2011), 24 species and close to Lakouéténé et al. (2009), 27 species. The most used are those of the family Euphorbiaceae with 15, 4%. This resultdiffers from the one found by Dibong et al which is a case of the Poaceae family with a proportion of 17%. They are used in children under 5 to fight against diarrhea or to stimulate appetite.

However, may study interest in plants used in the diet of children under 5 years of age. The chemical content of some plants could justify their use. The illustrative case *of Acacianilotica, Faidherbiaalbida*, contain tannins (Hostettman et al., 2010) ;Bouquet. and Debray. , 1974 ;IWU MM, 1993). These chemical compounds are known for their anti-diarrheal properties and their astringent role in the treatment of diarrhea (Anonymous ENDA Third World, 1986). ;Weis. 1997). As for diarrhea, *Adansonia* species*digitata, Acacianilotica, Euphorbiahirta*are used by the Senufo people of northern Côte d'Ivoire (Koné et al. , 2002), by the populations in western Burkina Faso (Flahaut, 1999) and the central plateau (Nacoulma- Ouedraogo, 1996). With regard to plants used for the growth of children by stimulating their appetite such as *Schwenckiaamericana L. ,Commiforaafricana (A. Rich), Lanneafruiticosa (Hochst. exA. rich), Euphorbiabalsamifera Ait. Gisekiapharnacioides L.* have not been studied on their properties to stimulate appetite for good growth in children.

The barks are the most used parts (46. 4%), this result differs from that of Zirihi (1991) which showed that the leaves were mostly used in 64. 49% of cases, in Bétéd'Issia (Côte -Ivoire), the one established by Adjanohoun and Aké Assi (1979) who indicated that the leaves were solicited, mostly in 59. 10% of cases. This can be justified by a difference of place. The most evoked modes of preparation is the transformation into powder after drying of the plants in 70. 9%. This result differs from that found by Koffi et al in 2007, which states that decoction is the most sought-after method of preparation (42. 30%). This result is close to that established by Adjanohoun and Aké Assi (1979) who indicate that the decoction is mainly used in 32. 94% of cases.

Conclusion

This study shows that several plant species are used in children under 5 years of age. The most restrained ones are those used against diarrhea and the growth of children. The use of these plants differs geographically from one commune to another. The diversity of properties and indications, the various organs used, as well as the methods of preparation and administration, testify to a good knowledge of the plant diversity of traditional healers and mothers of children in the study area. Nevertheless, for better use of medicinal plants, while preserving natural resources, a user awareness policy should be developed to teach them good practices in plant harvesting, plant management and protection. However, biological and chemical tests will verify the veracity of the therapeutic indications received for an extension as an alternative for the prevention of moderate acute malnutrition in children under 5 years of age.

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