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Ethnobotanical study and inventory of medicinal plants used in the treatment of dermatological diseases in southern Benin

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ABSTRACT

The use of phytotherapy in the treatment of skin diseases is becoming more and more widespread in Benin due to the increasing number of dermatological diseases and the cosmetologically demands of the population. This study aimed to identify the medicinal plants used to treat common dermatoses in southern Benin. The methodology is based on ethnobotanical surveys carried out with the help of questionnaires among traditional therapists and medicinal plant sellers of different ages and sexes in some communes of southern Benin. The results obtained allowed us to identify 54 species of medicinal plants used in the treatment of dermatoses. The most frequently cited species include *Crateva adansonii*, *Zanthoxylum zanthoxyloides*, *Ageratum conyzoides*, *Cassia alata*, and *Chromolaena odorata*. Leaves are the most commonly used organ (73.29%). Decoction is the most popular method of preparation (95.4%), while bathing is the most commonly recommended method of administration (54.68%). All the information gathered will be used to create a database for future studies in the Beninese pharmacopeia to evaluate the efficacy of these antibacterial plants.

Keywords: Phytotherapy, Dermatitis, Decoction, Efficacy.

INTRODUCTION

They are a group of pathologies whose most visible symptoms are manifested in the target organs, particularly the skin, mucous membranes, and appendages [2]. Over the last 30 years, the incidence of these conditions has increased sharply in all regions of the world, including emerging countries [3]. Dermatoses are common in all age groups. They occupy an important place in the consultation profile in Africa and are among the most obvious major human pathologies, grouping mycotic, parasitic, bacterial, and viral infections [4]. Several studies have investigated the prevalence of these conditions worldwide and recognized them as a public health problem [5]. In Mali, dermatoses account for 10% of consultations, with a predominance of bacterial dermatoses [6]. In Benin, work carried out in 2012 showed that the most common clinical form of atopic dermatitis in Cotonou hospitals was eczema vulgaris [7]. From July to November 2019, a study in the Dermatology-venereology department of the largest referral hospital: Centre National Hospitalier Universitaire Hubert Koutoukou MAGA (CNHU-HKM) in Cotonou, on a sample of 119 children (aged 0 to 18 years), showed that immunoallergic dermatoses predominated (47.1%), followed by infectious dermatoses (40.4%). Atopic eczema (25.2%) and prurigo strophulus (14.3%) were the most common immunoallergic dermatoses, while candidiasis (29.1%) was the most common mycotic infection [8]. The standard treatment for these skin conditions is based on courses of corticosteroids and antibiotics. The results of these treatments can be slow, less effective, and limited by their high cost and side effects. Similarly, in Africa, most patients do not have access to essential dermatological medicines because they are expensive, which explains the growing interest in phytotherapy [9]. There are many avenues of research, but the exploration of natural resources seems to be one of the most promising, as their biodiversity makes them the largest reserve of active substances [10]. This would be a laudable alternative, as more than 80% of the African population in general, and the population of Benin in particular rely on traditional medicine for treatment [11, 12]. With this in mind, this study was carried out among those involved in the use of traditional plants, i.e. medicinal plant sellers and traditional therapists, to gain a basic understanding of the medicinal plants most commonly used in southern Benin for the treatment of dermatological conditions.

MATERIAL AND METHODS

Description of the study area: Benin is located in West Africa, between 6°30' and 12°30' north latitude and between 1° and 3°40' east longitude. It takes the form of a block perpendicular to the coastline in the Gulf of Guinea, which includes the Gulf of Benin. It has a population of over 5.894.168 (INSAE-RGPH 4, 2013) [13]. It is bordered by the Atlantic Ocean to the south, Niger to the north, Burkina Faso to the northwest, Nigeria to the east, and Togo to the west. Bénin is characterized by three types of climates:

the Beninese climate in the south, the dry tropical climate in the north between the 9th and 12th parallels, and a transitional humid tropical climate between the 7th and 9th parallels. The study area is the south of Benin, located between latitude 6°19' and 7°27' north and between longitude 1°38' and longitude 2°48' east. It consists of 7 departments and 44 municipalities. It is bounded to the north by the department of Colline, to the south by the Atlantic Ocean, to the east by Nigeria, and to the west by Togo. The study was carried out in the departments of Atlantique, Couffo, Littoral, Mono, Ouémé, Plateau, and Zou (Figure 1).

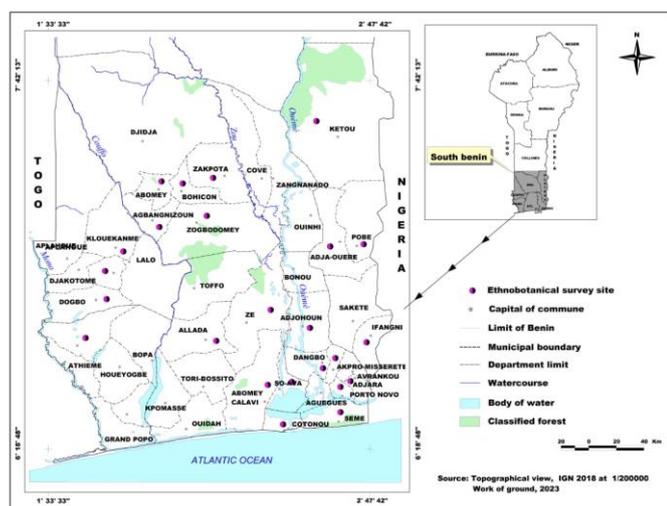


Figure 1: Map of the study area

Survey: The ethnobotanical study was carried out following a survey using a form containing questions on both the plants (name of plant species, organ used, preparation and administration methods) and the respondent (gender, level of education, age, origin of knowledge, experience).

Data processing: Survey data were entered and coded in a Microsoft Office 2019 Excel spreadsheet. Descriptive analysis of the data was performed using R software (version 4.2.2). Categorical variables were analyzed using contingency tables and chi-squared tests to determine the relationship between categorical variables. A p-value of less than 0.05 was considered statistically significant. Relative citation coefficients (RCF) and Family Importance Value Index (FIV) were calculated to retain the most cited plants and families. Simple linear regression was used to determine the relationship between the number of family citations and the FIV. Graphs were generated using Graph Pad Prisme 9.5 software.

RESULTS AND DISCUSSION

During the course of the survey, 255 people were interviewed (Atlantic: 46 (18.00%), Couffo: 42 (16.50%), Littoral: 25 (09.80%), Mono: 37 (14.50%), Ouémé: 31 (12.20%), Plateau: 23 (09.00%), Zou: 51 (20.00%)), including 145 herbalists (56.86%) and 110 herbal medicine sellers (43.14%) (Table 1).

Description of the survey population by age: The age of the respondents (Traditional therapists and Medicinal plant sellers) ranged from 19 to 73 years, with an average age of 46.72 ± 11.301 , with a predominance of people aged between 31 and 60 (212 people, or 83.10%). In the 61 to 90 age brackets, there were 28 people, or 11%. Young people under the age of 31 account for the smallest proportion

(5.90%) of the total workforce (Table 1). It was found that people in this age group have very little interest in traditional medicine.

Results show that people in the 30 to 60 age brackets have more knowledge than those in other age groups. This could be explained by the fact that knowledge of medicinal plants and their properties is generally acquired through long experience and passed down from one generation to the next. Experience accumulated with age is therefore the main source of local information on the use of plants in traditional medicine [14]. A survey by Sema et al in 2018 carried out in Doufelgou prefecture in Togo showed that 83% of those surveyed had inherited this practice from their ancestors [15]. El Hahyaoui et al. in 2015, also showed that knowledge of medicinal plants is the result of long experience acquired after many years of practice. Thus, older people are expected to provide more reliable information. It is therefore accepted that, in Africa, it is adults who hold the traditional knowledge of how to treat illnesses [16].

The coefficient of determination ($R^2 = 0.6836$) shows that the number of years of experience in using medicinal plants for skin disorders is moderately correlated with age. (Figure 2).

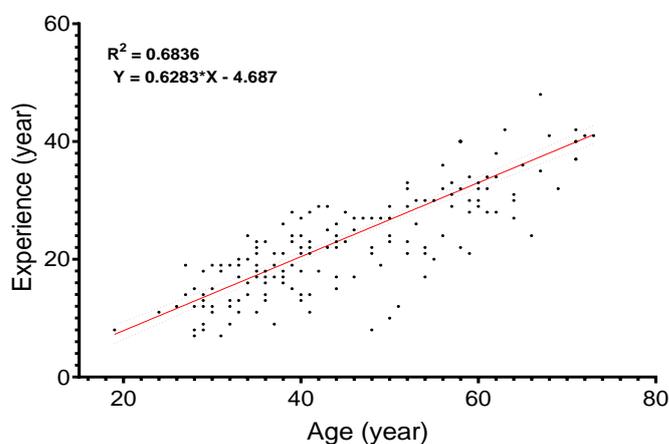


Figure 2: Relationship between years of experience and age of respondents

Description of the survey population by gender: In the present study, all the traditional therapists surveyed were male, while the medicinal plant sellers were female. Of the 255 people surveyed 110 (43.10%) were women and 145 (56.90%) were men (Table 1). This shows that both men and women know medicinal plants. A Study by Fah et al 2013 in the markets of Cotonou and Abomey Calavi in Benin showed that sales are often reserved for women, the majority of whom were between the ages of 30 and 60 [17]. These findings are also in line with those of Dassou et al in 2014 and Agbankpè et al in 2014, who came to the same conclusion [18, 19].

As for traditional therapists, they are all men, the majority aged between 31 and 60 (82.10%). This difference from medicinal plant sellers is explained by the fact that the traditional therapist is often associated with other sciences, such as geomancy, which is reserved for adults and especially men. This finding is identical to that of Klotoe et al. 2012; Dassou et al. 2014; Agbankpè et al. 2014 [20, 18, 19].

Description of the survey population by marital status: Regarding marital status, 96.90% of the survey population (traditional therapists and medicinal plant sellers) were married, 2.40% were single, and 0.80% were widowed (Table 1). These results are close to those of Benkhiguel et al. in 2011 and El Hilah in 2016 in Morocco, with 80% of married people and 19% who were still single [21, 22].

Table 1: Socio-demographic characteristics

Parameters	Characteristic	Size / Frequency	Traditional therapists	Medicinal plant sellers	Total	
Provinces	Atlantique	Size	15a	31b	46	
		Frequency	10.30	28.20	18.00	
	Couffo	Size	42a	0b	42	
		Frequency	29.00	0.00	16.50	
	Littoral	Size	6a	19b	25	
		Frequency	4.10	17.30	9.80	
	Mono	Size	37a	0b	37	
		Frequency	25.50	0.00	14.50	
	Oueme	Size	11a	20b	31	
		Frequency	7.60	18.20	12.20	
	Plateau	Size	13a	10a	23	
		Frequency	9.00	9.10	9.00	
Zou	Size	21a	30b	51		
	Frequency	14.50	27.30	20.00		
	Total	Size	145	110	255	
		Frequency	100	100	100	
Experience	]0-10]	Size	0a (0.00)	10b (9.10)	10 (3.90)
		Frequency				
	]10-20]	Size	16a	57b	73
		Frequency	11.00	51.80	28.60	
	]20-30]	Size	72a	42a	114
		Frequency	49.70	38.20	44.70	
	]30-40]	Size	51a	1b	52
		Frequency	35.20	0.90	20.40	
	]40-50]	Size	6a	0b	6
		Frequency	4.10	0.00	2.40	
		Total	Size	145	110	255
			Frequency	100	100	100
Gender	Female	Size	0a	110b	110	
		Frequency	0.00	100.00	43.10	
	Male	Size	145a	0b	145	
		Frequency	100.00	0.00	56.90	
	Total	Size	145	110	255	
		Frequency	100	100	100	
Age	]0-30]	Size	0a	15b	15
		Frequency	0.00	13.60	5.90	
	]30-60]	Size	119a	93a	212
		Frequency	82.10	84.50	83.10	
	]60-90]	Size	26a	2b	28
		Frequency	17.90	1.80	11.00	
	Total	Size	145	110	255	
		Frequency	100	100	100	
Marital status	Single	Size	0a	6b	6	
		Frequency	0.00	5.50	2.40	
	Married	Size	145a	102b	247	
		Frequency	100.00	92.70	96.90	
	Widow	Size	0a	2a	2	
		Frequency	0.00	1.80	0.80	
	Total	Size	145	110	255	
		Frequency	100	100	100	
School education	Non-educated	Size	102a	31b	133	
		Frequency	70.30	28.20	52.20	
	Primary	Size	4a	29b	33	
		Frequency	2.80	26.40	12.90	
	Secondary	Size	38a	50b	88	
		Frequency	26.20	45.50	34.50	
	University	Size	1a	0a	1	
		Frequency	0.70	0.00	0.40	

	Total	Size	145	110	255
		Frequency	100	100	100
Origin of knowledge	Training courses	Size	0a	3b	3
		Frequency	0.00	2.70	1.20
	Heritage and training	Size	20a	2b	22
		Frequency	13.80	1.80	8.60
	Heritage	Size	125a	104b	229
		Frequency	86.20	94.50	89.80
	Family initiation	Size	0a	1a	1
		Frequency	0.00	0.90	0.40
	Total	Size	145	110	255
		Frequency	100	100	100

Description of the survey population by educational level: In terms of academic level, most of the respondents were illiterate (52.20%), 12.90% had a primary level, 34.50% had a secondary level and only 0.40% had a university degree (Table 1). These results indicate that the level of education does not influence the knowledge of medicinal plants [18].

These results are consistent with those cited in the work of Benkhniue and Fadli, (2011), who found that illiterates accounted for more than 60% of the population surveyed with knowledge of medicinal plants [21].

Description of the survey population according to the source of information about plants: Regarding the origin of the knowledge, the majority of the respondents (89.80%) received the knowledge as an inheritance, 8.60% of the respondents acquired their knowledge through inheritance and training, while 1.20% of the study population received their information through reading and healers (training) and the rest (0.40%) through a family initiation (Table 1). This finding confirms the studies by Klotoé et al, 2013, and Benlamdini, 2014, according to which the virtues of plants are ancestral knowledge transmitted from generation to generation. This reflects the path of relative transmission of traditional practices that occurs from one generation to the next [23, 24].

Plant parts used: The most frequently used plant organs in the treatment of skin complaints are shown in Figure 3. Leaves are the most used (72.77%), roots (12.15%) and bark (9.81%), and Seeds (2.05%).

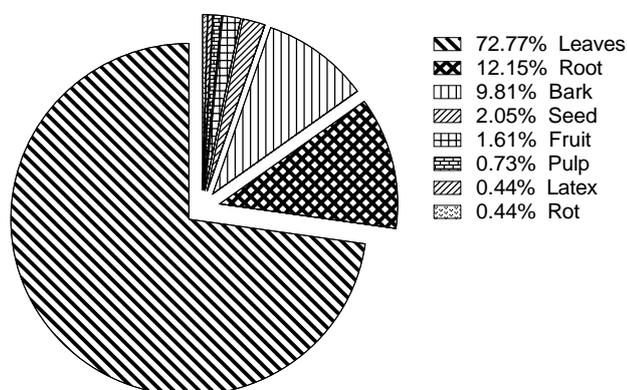


Figure 3: Percentage of plant parts used

Considered the most accessible organ of a plant, interest in leaves is because they are the storage site for secondary metabolites, which are responsible for the plant's biological properties [25, 26]. Diatta et al.'s work (2013) on medicinal plants used to treat dermatitis in the

pharmacopeia in Ziguinchor, a region of Senegal shows that leaves are the most commonly used organ (46%), followed by roots (21%) and bark (14%) [27]. This confirms the results of the present study. The results from Monteiro et al. in 2010 and Dibong et al. in 2011 work, show that generally leaves are the most commonly used organ in traditional medicine [28, 29]. The results of several studies conducted elsewhere in Africa are consistent with this [30, 31].

Plant extract preparation: According to Figure 4, plant parts are mainly prepared by decoction (92.63%), rarely by trituration (2.04%) or ointment (1.41%). Other preparation methods are used to a lesser extent.

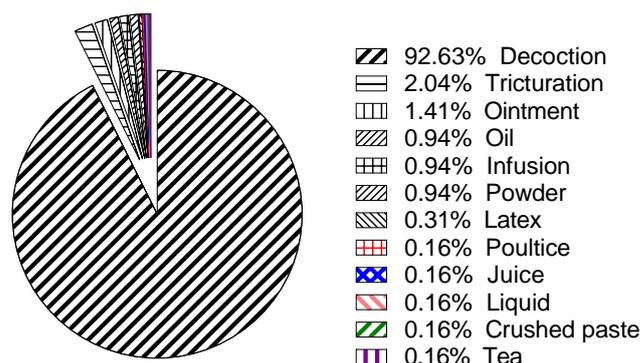


Figure 4: Plant preparation method

Several studies have shown that decoction is the most commonly used method of preparing herbal medicines. In Benin, Koudokpon et al 2017, Fah et al 2017 and Dougnon et al 2016 works came to the same conclusions [14, 17, 32]. In other parts of Africa, several authors from South Africa, Togo, Congo, and Nigeria have also found that decoction is the most commonly used preparation method by traditional healers [33, 34, 35, 36]. In 2017, Kinda et al. reported that this method is the most effective way to extract bioactive compounds from plants. This may explain why it is the most commonly used and recommended method by many traditional healers [37].

Method of administration of medicinal plants: Figure 5 shows the distribution of prescriptions according to the method of administration. In 50.98% of cases, the preparations were administered orally and as a bath, in 30.20% of cases only as a bath (rinsing), and in 10.98% of cases only orally. The use of creams, ointments, and compresses was 5.10%, 2.35%, and 0.39% respectively.

Table 2: List of plant species used in the traditional treatment of dermatoses in Southern Benin

Plants	Family	Common name	Organ	Method of preparation	Method of administration	Organ condition	FC	FCR
<i>Agerantum conyzoides</i>	Asteraceae	Kouvito takin	Leaves	Decoction	Bath/Oral	Fresh/ Dry	49	19.29
<i>Adansonia digitata</i>	Bombacaceae	Kpassa	Bark	Decoction	Bath	Fresh/ Dry	1	0.39
<i>Acanthospermum hispidium</i>	Asteraceae	Kpononmi	Leaves	Decoction		Fresh	2	0.79
<i>Azadirachta indica</i>	Meliaceae	Neem/kininoutin	Leaves/seeds/Fruit	Decoction/Oil /Ointment	Bath/Oral/Transdermal	Fresh/ Dry	15	5.90
<i>Argemone Mexicana</i>	Papaveraceae	Houètchégnon man	Leaves	Decoction	Bath/Oral	Fresh	1	0.39
<i>Acacia nilotica</i>	Mimosaceae	Gbanni	Leaves	Decoction/trituration	Bath	Fresh/ Dry	1	0.39
<i>Anarcadium occidentale</i>	Amaranthaceae	Akajou tin	Bark	Decoction	Bath/Oral	Fresh/ Dry	1	0.39
<i>Abrus precatorius</i>	Fabaceae	Viviman	Leaves	Decoction	Bath	Fresh	1	0.39
<i>Annona senegalensis</i>	Annonaceae	Gnigoulé	Leaves/Bark	Decoction	Bath/Oral	Fresh/ Dry	12	4.72
<i>Aloe vera</i>	Liliaceae / Aloeaceae	Aloes	Leaves/Fruit/ Latex/Rod	Decoction/Latex/Ointment	Bath/Transdermal	Fresh	8	3.15
<i>Crateva adansonii</i>	Capparaceae	Hontonzunzin	Leaves/Root/Pulp	Decoction/Ointment	Bath/Oral/Scrubbing	Fresh	77	30.31
<i>Cassia alata</i>	Fabaceae	Amanssou	Leaves/Pulp	Decoction/Crushed paste/Powder/trituration	Bath/Oral/Transdermal	Fresh	49	19.29
<i>Cajanus cajan</i>	Papilionaceae	Klouékoun man	Leaves	Decoction	Bath/Oral	Fresh	5	1.97
<i>Cymbopogon citratus</i>	Poaceae	Tchaman	Leaves	Decoction/infusion	Oral	Fresh	1	0.39
<i>Chassalia kolly</i>	Rubiaceae	Djètin man	Leaves	Decoction	Bath	Fresh	1	0.39
<i>Citrus limon</i>	Rutaceae	Klétin	Leaves/Fruit	Decoction	Bath/Oral/Transdermal	Fresh	3	1.18
<i>Combretum micranthum</i>	Combretaceae	Kinikiniba	Leaves/Fruit	Decoction	Bath/Oral	Fresh/ Dry	2	0.79
<i>Cola nitida</i>	Sterculiaceae	Golotin	Fruit	Decoction	Bath/Oral	Fresh	1	0.39
<i>Cocos nucifera</i>	Arecaceae	Agonkètin	Fruit	Oil	Transdermal	Dry	1	0.39
<i>Cassia occidentalis</i>	Fabaceae	Gbessin man	Leaves/Seeds	Decoction/Tea/Tricturation	Bath/Oral	Fresh	12	4.72
<i>Chromolaena odorata</i>	Asteraceae	Agatouman	Leaves/Pulp	Decoction/Tricturation	Bath/Oral	Fresh	47	18.50
<i>Carica papaya</i>	Caryphyllaceae	Kpintin	Leaves	Decoction	Bath/Oral	Fresh	1	0.39
<i>Calotropis procera</i>	Asclepiadaceae	Amonman	Leaves/Rod	Decoction/Latex	Bath/Transdermal	Fresh	3	1.18
<i>Caesalpinia pulcherrima</i>	Fabaceae		Leaves	Decoction/Ointment	Bath/Oral/Scrubbing	Fresh	21	8.27
<i>Heliotropium indicum</i>	Boraginaceae	Koklossoudenpaja	Leaves/Flower	Infusion	Oral	Fresh	1	0.39
<i>Hyptis suaveolens</i>	Lamiaceae	Sanssoukpe man/ Azonglidi	Leaves	Decoction	Bath/Oral	Fresh	21	8.27
<i>Hibiscus sabdariffa</i>	Malvaceae	Bissap	Leaves/Flower/Root	Decoction/Infusion	Oral/Transdermal	Fresh/ Dry	2	0.79
<i>Jatropha curcas</i>	Euphorbiaceae	Gnikpotin wéwé	Leaves/Seeds/Root	Decoction/Oil	Bath/Oral/Transdermal	Fresh/ Dry	7	2.76
<i>Jatropha gossypifolia</i>	Euphorbiaceae	Gnikpotin vovo	Root	Decoction	Bath/Oral	Fresh/ Dry	3	1.18
<i>Jatropha multifida</i>	Euphorbiaceae	Akpawi	Leaves	Decoction	Bath/Oral	Fresh	21	8.27
<i>Khaya senegalensis</i>	Meliaceae	Kailcédrat	Leaves/Bark/Root	Decoction/trituration	Bath/Oral	Fresh/ Dry	35	13.78
<i>Momordica charantia</i>	Cucurbitaceae	Gninssikin	Leaves/Fruit	Decoction/Liquid/Powder/trituration	Bath/Oral/Transdermal	Fresh	42	16.54
<i>Mangifera indica</i>	Anacardiaceae	Yovosintin	Bark	Decoction	Bath/Oral	Fresh/ Dry	3	1.18
<i>Moringa oleifera</i>	Moringaceae	Kpatinma wini	Leaves/Root	Decoction/Powder	Bath/Oral/Transdermal	Fresh	10	3.94
<i>Mitracarpus scaber</i>	Rubiaceae	Godoko	Leaves	Trituration	Transdermal	Fresh	1	0.39

Plants	Family	Common name	Organ	Method of preparation	Method of administration	Organ condition	FC	FCR
<i>Newbouldia laevis</i>	Bignoniaceae	Kpatin/ désrégué	Leaves	Decoction	Bath/Oral	Fresh	11	4.33
<i>Nauclea latifolia</i>	Rubiaceae	Kodo	Root	Decoction	Bath/Oral	Fresh/ Dry	6	2.36
<i>Ocimum Americana</i>	Lamiaceae		Leaves	Decoction	Bath/Oral	Fresh	9	3.54
<i>Ocimum canum</i>	Lamiaceae	Késsoukéssou	Leaves	Decoction	Bath/Oral	Fresh	2	0.79
<i>Ocimum gratissimum</i>	Lamiaceae	Tchiayo	Leaves	Decoction/Ointment	Bath/Oral/Scrubbing	Fresh	36	14.17
<i>Parkia biglobosa</i>	Fabaceae	Ahwatin	Leaves/Bark	Decoction	Bath/Oral	Fresh/Dry	9	3.54
<i>Phoenix dactylifera</i>	Arecaceae		Fruit	Decoction	Transdermal	Dry	1	0.39
<i>Ricinus communis</i>	Euphorbiaceae	Féfé/ Gogozunkuin	Fruit	Decoction/Ointment	Bath/Transdermal	Fresh/ Dry	3	1.18
<i>Rhizophora racemosa</i>	Rhizophoraceae		Leaves/Bark	Decoction	Bath/Oral	Fresh/ Dry	2	0.79
<i>Sida acuta</i>	Malvaceae	Adonman	Leaves	Decoction/Tricuration	Bath	Fresh	1	0.39
<i>Senna sp</i>	Fabaceae		Leaves	Decoction	Bath/Oral	Fresh	7	2.76
<i>Tamarindus indica</i>	Asteraceae	Djèvivi tin	Bark/Fruit/Pulp	Decoction/Infusion/Juice	Bath/Oral	Fresh/ Dry	3	1.18
<i>Taraxacum officinalis</i>	Lamiaceae	Gnantoto	Leaves/Root	Poultice/Decoction/infusion	Oral/Transdermal	Fresh/ Dry	3	1.18
<i>Tridax procumbens</i>	Asteraceae	Hladogbo	Leaves	Decoction	Bath/Oral	Fresh	5	1.97
<i>Voacanga Africana</i>	Apocynaceae	Agbossou ningla	Bark/Root	Decoction	Bath/Oral	Fresh/ Dry	2	0.79
<i>Vernonia amygdalina</i>	Asteraceae	Amavivè	Leaves	Decoction	Bath	Fresh	1	0.39
<i>Vernonia colorata</i>	Asteraceae	Dadorizihan	Leaves	Decoction/Tricuration	Bath	Fresh	1	0.39
<i>Vitellaria paradoxa</i>	Sapotaceae		Leaves/Bark/Fruit	Decoction/Oil	Bath/Oral/Transdermal	Fresh/ Dry	5	1.97
<i>Zanthoxylum zanthoxyloides</i>	Rutaceae	Hètin	Leaves/Bark	Decoction/Infusion	Bath/Oral	Fresh/ Dry	62	24.41

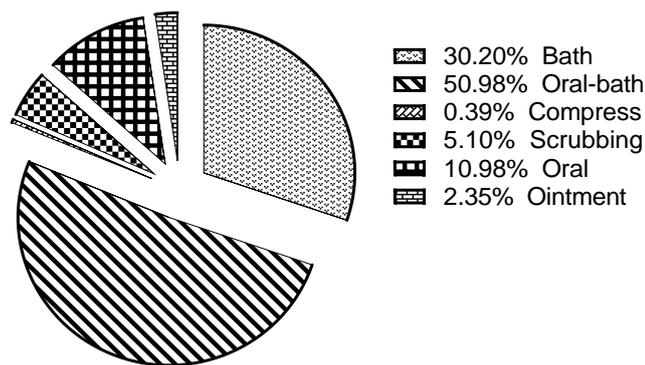


Figure 5: Recipe Management Mode

The results of Agbankpé et al in 2015, Fah et al in 2013, and Lawin et al in 2015 in Benin, which showed that the oral route was the route of administration for most herbal preparations, are similar to ours [17, 19, 38]. The same results were obtained in some African countries by Alfa et al. in 2018 in the central region of Sotouboua in Togo [35], and Ngbolua et al. in 2019 in Congo [37]. Kinda et al. in 2017 in the Hauts Bassins region of Burkina Faso [37], Gbadamosi et al. in 2014, and Ohemu et al. in 2014 in Nigeria [39, 40]. Distribution of species by botanical family: The most represented families in our study were Asteraceae (13.0%), followed by Fabaceae (11.1%), Lamiaceae (9.3%), Euphorbiaceae (7.4%) and Rubiaceae (5.6%) (Figure 6).

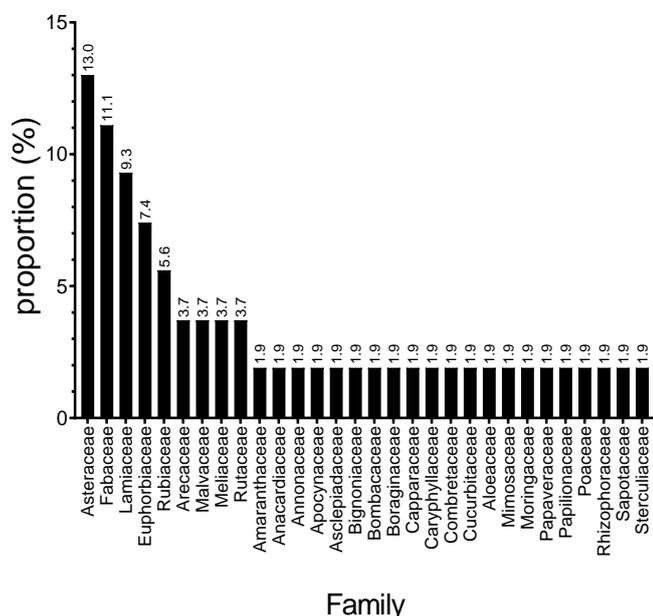


Figure 6: Breakdown by botanical family

The results of this study differ from those of Dougnon et al. (2016) and Koudokpon et al. (2017) who, in their studies of plants used to treat infections, highlighted the predominance of legume species among the species recorded [14, 32]. Other researchers in Africa found that Fabaceae species were the most common [35, 41].

This may be related to geographical conditions (soil type, climatic factors, etc.), which do not always favor the growth of the same plant species on different soil types and therefore have a significant influence on bioactive compounds, but also on socio-cultural factors [42]. As knowledge of the therapeutic use of plants is often passed

down from one generation to the next, the plants indicated for the treatment of a disease may also differ from one locality to another or from one ethnic group to another. As knowledge of the therapeutic use of plants is often passed down from one generation to the next, the plants indicated for the treatment of a disease may also differ from one locality to another or from one ethnic group to another.

Frequency of citation of plants used for the treatment of skin disorders: The 54 plant species most frequently cited by traditional therapists and medicinal plant sellers for the treatment of dermatological infections are listed in Table 2. This table shows the frequency of citation (FC), the relative coefficients of citation (FRC), the organ of the plant used, the method of preparation of the plants, and the method of administration of the recipe.

The most frequently mentioned species were *Crateva adansonii*, *Zanthoxylum zanthoxyloides*, *Ageratum conyzoides*, *Cassia alata*, and *Chromolaena odorata* with frequencies of 77%, 62%, 49%, 49%, and 47% respectively. The most frequently mentioned species were not necessarily in the order of the most represented botanical families.

CONCLUSION

This ethnobotanical study showed that southern Benin is an area rich in medicinal plant species indicated in the traditional treatment of skin diseases. Medicinal plant sellers and traditional therapists reported 54 medicinal plants for the treatment of dermatoses, of which 5 were frequently cited. However, this requires more in-depth pharmacological and toxicological studies

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Conflicts of Interest

The author reports no conflicts of interest.

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