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Original Research Article

Ethno Pharmacological Knowledge of Common Medicinal Plants Used for the Traditional Treatment of Oral Pathologies in the Mayo-Kani Division, (Cameroon)

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Abstract

Introduction*:** Studies on plants used for the treatment of oral diseases in Cameroon are still scant. The objective of this study was to identify medicinal plants and recipes used for the traditional treatment of oral diseases in the department of Mayo-Kani (Far North, Cameroon). ***Methodology*:** This is a descriptive cross-sectional study conducted over a period of 7 months, during the year 2021. After obtaining the various administrative authorisations, an ethnopharmacological survey was carried out among traditional practitioners known to treat oral ailments in the Mayo-Kani department. The plants collected, were photographed and the samples were identified at the Delegation of Forests and Fauna of Mayo-Kani and then confirmed by botanists and experts from the Cameroon National Herbarium (CNH). ***Results: This ethnopharmacological survey conducted among 43 traditional practitioners identified 40 species in 28 botanical families, of which *Mimosaceae, Euphorbiaceae, Combretaceae, Anthericaceae, Fabaceae, Solanaceae* and *Anacardiaceae* were the most represented. These species were used in the preparation of 40 recipes. Around 77.2% of these recipes and 77.7% of the plants listed were used in the treatment of caries and their complications such as cervico-facial cellulitis. Roots (38.5%) followed by barks (20.9%) were the most used plant organs. Decoction (43.2%) was the most used preparation method. In all, 50% of the recipes proposed, were used in the form of herbal tea. Mouthwash (50%) was the most used method of administration. *Ricinus communis* (CF= 11.4%; 03 recipes), *Sclerocarya birrea* (CF= 6.6%; 03 recipes), *Indigofera* aff *subargenta*, *Capparis facicularis* and *Anogeissus leocarpus* (CF= 5%; 03 recipes) were the most cited and used in traditional recipes to treat oral pathologies. ***Conclusion:*** These findings constitute a basic data base for future studies on phytochemical, pharmacological and toxicological analyses essential for the valorization of traditional medicines.

Keywords: Ethnobotanique, medicinal plants, phototherapy, oral pathologies.

INTRODUCTION

Oral diseases occur at all ages and affect approximately 3.5 billion people worldwide [1]. In odontostomatology, pain remains at the epicentre of the reasons for consultation [1, 2]. In Cameroon, 78.2% of patients consult for pain [2]. The workers in the informal sector are mostly resourceful and often practice self-medication and/or traditional therapy [2]. In remote areas, both health workers and the population have very limited access to modern health care, especially for oral diseases. This is due to the absence of specialised doctors in these remote areas with bad roads and the low level of education of the population [3]. Traditional herbal medicines are commonly used as an alternative to modern oral health care treatments, due to the low socio-economic level of these populations [4]. Most plants in the African environment have valuable medicinal properties that are used by more than 80% of the African population for their primary health care in general and the treatment of oral diseases in particular [5]. It has therefore become evident that herbal medicines can be effective treatments, as it is common to find traditional practitioners offering mouthwash potions and plant extracts for tooth extraction [4]. However, very few medicinal plants used

in the treatment of oral pathologies have been identified in Africa and in our context. The objective of this study was to identify the medicinal plants and recipes used for the traditional treatment of oral diseases in the Mayo-Kani division, Far North region of Cameroon.

MATERIALS AND METHODS

This is a descriptive cross-sectional study conducted over a period of 7 months, during the year 2021. After obtaining the various administrative authorisations, an ethnopharmacological survey was carried out among traditional practitioners known to treat oral ailments in the Mayo-Kani department. Data collection consisted firstly of the development of the ethnopharmacological survey following the framework proposed by Adjanahoum *et al*., (1989) [6] and used by Bayaga *et al*., (2017) [7]. Subsequently, traditional healers registered with the health districts, health area chiefs and populations, were contacted and consulted. Secondly, the ethno pharmacological survey was carried out through photography, sample collection and identification of medicinal plants at the National Herbarium of Cameroon in Yaoundé. Therapeutic interest was determined by calculating the citation weight or citation frequency (CF) of each medicinal plant and species identified with a specific recipe. Data were collected and analysed by CSPro 7.3 and exported to SPSS for tabulation, flat sorting and pivot tables. Graphs were obtained using Excel 2016.

Study site

The study took place in the Mayo-Kani division. It is located in the Far North Region of Cameroon between 10°13'27" North latitude and 14°31'7" East longitude. It has seven subdivisions namely: Kaele, Guidiguis, Touloum, Taibong, Moutourwa, Moulvoudaye, Mindif; and covers an area of 5033 km².

RESULTS

Socio-demographic profile of traditional healers

Forty-three traditional healers from the seven districts of Mayo-Kani division participated in this study. Most of the traditional healers were male (88.4%), with a sex ratio (M/F) of 7.6. Their ages ranged from 25 to 93 years, with an average age of 56.6 years. The Christian religion was the most represented with 60.4%. A total of 44.2% of these traditional practitioners had no schooling. The number of years of experience of these traditional healers ranged from two to seventy years, with an average of 23.8 years. About 69.8% said they received their knowledge from their parents.

Medicinal plants used in the treatment of oral pathologies

Forty five species used in the traditional treatment of oral pathologies were mentioned. Among these species, five could not be identified due to lack of botanical samples. Table I presents the list of the 40 species identified. It also highlights the morphological types, organs used, preparation methods and therapeutic indications. These species were distributed in 28 botanical families of which the most represented were the *Mimosaceae* (5 species, i.e. 12.5%), followed by the *Euphorbiaceae* and *Combretaceae* (3 species each, i.e. 7.5%). The *Anthericaceae*, *Fabaceae*, *Solanaceae*, and *Anacardiaceae* represented 2 species each (5%). The other 21 families were in the minority and represented by one species each.

Biological types

A variety of biological types, including trees, shrubs, herbs and lianas, were identified. Trees represent 42.0% of the 40 plants identified and shrubs 37.0% (Figure 1).

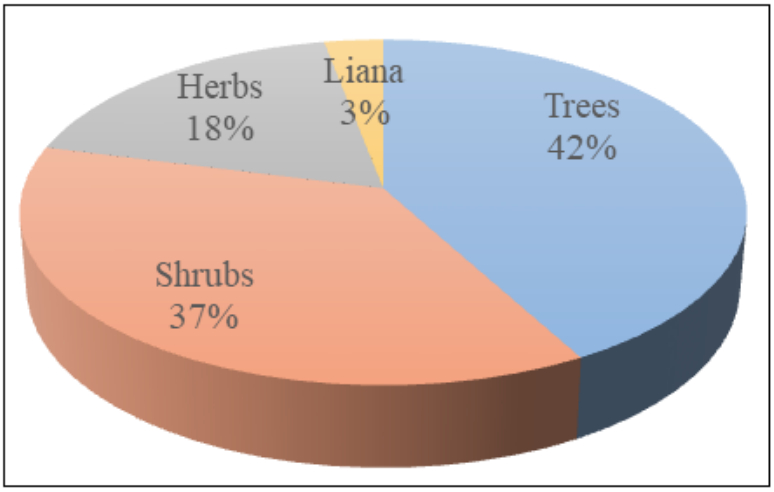

Figure 1: Distribution of medicinal plants by biological type recipes used for the treatment of oral pathologies

Forty recipes, composed of one species or a combination of species, were identified in this study. Table II describes the recipes, the dosage and the oral pathologies treated. These recipes were indicated for the treatment of many oral diseases including dental caries and cervico-facial cellulitis, which were the most prevalent. Table III gives more details on these indications.

Table I: List of 40 plants identified and used in the treatment of oral diseases in Mayo-Kani

Family	Species	Local name	Biological type	Organ used	Method of preparation	Method of administration	Therapeutic indication
Anacardiaceae	*Sclerocarya birrea* (A.Rich.) Hochst.	Tedori (Moundang)	Tree	Bark	Decoction	Mouthwash; Fumigation	Caries, cellulitis; Periodontal disease; Oral mucosal lesions; Painful flare-up
	Haematostaphis barteri Hook.f.	Toursoudje (Foufouldé)	Tree	Bark	Decoction; expression	Topical application; oral	
Annonaceae	*Annona senegalensis* Pers.	Teponri nasara (Moundang)	Shrub	Root	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Anthericaceae	*Allium tricoccum* Ait	Parékagué (Toupouri)	Grass	Root; fruit	Decoction; expression	mouthwash; topical application; poultice	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
	Allium sativum L.	Garlic	Grass	Fruit	Crushing	Topical application; catapult	Periodontal caries; lesions of the oral mucosa
Apocynaceae	*Thevetia neriifolia* (L.) Lippold	Kpuu fan dan gai (Moundang)	Shrub	Seed	Calcination	Fumigation	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Arecaceae	*Hyphaene thebaica* (L) Mart.	Menie (Moundang)	Tree	Root, stem	Decoction; expression	Mouthwash; topical application	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Asclepiodaceae	*Leptadeniahastata* (Pers.) Decne	Nah tesiemsou (Moundang)	Grass	Root	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Balanitaceae	*Balanites eagyptiaca* (L.) Délile	Kpuu tebakamé (Moundang)	Tree	Stem	Expression	Topical application	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Burseraceae	*Boswellia dalzeilii* Hutch.	Andakédji (Foufouldé)	Tree	Root and bark	Piloting	Topical application	Caries
Caesalpiniaceae	*Detarium senegalense* J.F.Gmel	Ngongohi (Foufouldé)	Tree	Bark			Periodontal disease; Cervico-facial cellulitis
Capparaceae	*Capparis facicularis* DC.	Adadidja (foufouldé)	Shrub	Root	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Caricaceae	Carica papaya L.	Tekoudje (Foufouldé)	Tree	Bark	Expression	Topical application; poultice	Caries; Cervicofacial cellulitis; Oral mucosal lesions
Celastiaceae	*Maytenus heterophilla* (Eckl. & Zeyh.) Robson	Teberok (Moundang)	Shrub	Root	Decoction	Mouthwash	Caries, Cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa
Combretaceae	*Combretum nigricans* Lepr. Ex Guill. & Perr.	Genah peri (Moundang)	Shrub	Root	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
	Anogeissus leocarpus (DC.) Guill. & Perr.	Kojoli (Foufouldé)	Tree	Root; bark; fruit	Decoction; crushing	Mouthwash; poultice; oral	Caries; Cervico-facial cellulitis; Periodontal disease
	Combretum fragrans F.Hoffm.	Pouki (Moundang)	Shrub	Root	Decoction	Mouthwash	Lesions of the oral mucosa
Convolvulaceae	*Ipomea batatas* (L.) Lam	Gou madiéré (Moundang)	liana	Sheet	Expression	Topical application	Caries; Cervico-facial cellulitis; Periodontal disease

Euphorbiaceae	*Ricinus communis* L.	Tetier/kpuu badieré (Moundang)	Shrub	Root	Decoction; crushing, maceration	Mouthwash; topical application	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
	Jatropha gossypiifolia L.	Kpuu zah see (Moundang)	Shrub	Seed	Piloting	Topical application; oral	Caries; Cervico-facial cellulitis
	Jatropha curcas L.	Kpuu zah loo (Moundang)	Shrub	Bark	Decoction	Mouthwash	Oral lesion
Fabaceae	*Indigofera aff subargentea* L .	Macelé (Moundang)	Grass	Root	Decoction	Mouthwash, oral	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
	Dalbergia melanoxylo Guill. & Perr.	Techari (Moundang)	Shrub	Stem + leaf	Decoction	Mouthwash, oral	Cervico-facial cellulitis
Loranthaceae	*Viscum congolense* Wildem. & E.Major	Kebaa (Moundang)	Shrub	plant	Decoction	Mouthwash; oral	Cervicofacial cellulitis
Malvaceae	*Gossipium barbadense* L.	Mberojuu (Moundang)	Shrub	Sheets	Maceration	Topical application; ear	Caries; Cervico-facial cellulitis
Meliaceae	*Azadirachta indicaA*. Juss.	Neem	Tree	Seed	Crushing	Topical application	Caries; Cervico-facial cellulitis; Periodontal disease
Mimosaceae	*Acacia polyacantha* (Willd.)Seigler and Ebinger	Golom (Guiziga)	Tree	Bark + African mistletoe	Piloting	Topical application	Caries; Cervico-facial cellulitis
	Parkia biglobosa (Jacq.) R. Br	Mbeliéré (Moundang)	Tree	Root	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease
	Acacia nilotica (L.) PJHHurter and Mabb	Gabdé (Foufouldé)	Tree	Seed or bark	Piloting	Topical application	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions; Halitosis
	Acacia radiana (Forssk.) Galassoet Banfi	Waafain (Moundang)	Tree	Bark	Decoction	Mouthwash; oral	Cervico-facial cellulitis
	Dischrostachys cinerea Wight et Arn	Barguem (Moundang)	Tree	Bark	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Moraceae	*Ficus sycomorus* L	Houri (Moundang)	Tree	Bark	Decoction	Mouthwash	Lesions of the oral mucosa
Moringaceae	*Moringa oleifera* Lam.	Nah teyang (Moundang)	Tree	Root	Expression	Topical application	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Rubiaceae	*Gardenia ternifolia* Schumach. & Thonn	Booré (Moun dang)	Shrub	Sheets	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Rutaceae	*Citrus aurantium* L.	Lémou(foufo uldé)	Shrub	Fruit	Decoction; extraction	Mouthwash; topical application	Caries; Cervico-facial cellulitis; Oral mucosal lesions
Solanaceae	*Datura metel* L.	Adatiemtiem (Guiziga)	Grass	Fruit and seed	Infusion	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease
	Capsicum frutescens L.	Tita petel (foufouldé)	Grass	Fruit	Maceration	Mouthwash	Caries
Sterculiaceae	*Sterculia setigera* Guill. & Perr.	Kpuu tah mor welle (Moundang)	Tree	Bark	Decoction	Mouthwash; oral	Cervico-facial cellulitis
Verbenaceae	*Vitex sp*	Tevohri (Moundang)	Shrub	Bark	Decoction	Mouthwash	Caries; Cervico-facial cellulitis; Periodontal disease; Oral mucosal lesions
Vitaceae	*Cissus quadrangularis* L.	Syinjuu (Moundang)	grass	Stem	Decoction	Mouthwash; oral	Cervico-facial cellulitis

Table II: Statement of recipes used for the treatment of oral diseases

Method of preparation and administration	Recipe number	Species (organs) used + associated elements	Therapeutic indications	Number of informants	Frequency and duration of treatment
Plant and organ decoction: After adding a volume of water proportional to the amount of plant material to be used, boil for 30 to 40 minutes; strain. To make the mouthwash	R1	*Ricinus communis* (root)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	5	3 times a day (morning, noon, evening) until healed
	R2	*Combretum nigricans* (root) + *Dischrostachys cinerea* (bark) + *Leptadenia hastata* (root)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	
	R3	*Capparis facicularis* (root)	Caries; cervico-facial cellulitis; periodontal disease; oral mucosal lesions	3	
	R4	*Sclerocarya birrea* (bark) + *Maytenus heterophylla* (root)	Caries, cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	2 times a day (morning and evening) until healed
	R5	*Gardenia ternifolia* (leaves) + *Vitex sp* (barks)	Caries; cervico-facial cellulitis; periodontal disease; oral mucosal lesions	1	
	R6	*Combretum fragrans* (root)	Lesions of the oral mucosa	1	
	R7	*Indigofera aff subargentea* (root) + *Hyphaene thebaica* (root) + *Parkia biglobosa* (root) + *Anogeissus leocarpus* (fruit)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	
	R8	*Acacia radiana* (bark) + *Sterculia setigera* (bark) + *Cissus quadrangularis* (stem) + *Anogeissus leocarpus* (bark)	cervico-facial cellulitis	1	
	R9	*Acacia nilotica* (bark or seed)	Oral mucosal lesions; halitosis	1	
	R10	*Annonas senegalensis* (root)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	
	R11	*Sclerocarya birrea* (bark)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	
	R12	*Jatropha curcas* (bark)	Lesions of the oral mucosa	1	
	R13	*Ficus sycomorus* (bark)	Lesions of the oral mucosa	1	
	R14	*Allium tricoccum* (root)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	Single socket
	R15	*Indigofera aff subargentea* (root)	Caries; cervico-facial cellulitis	1	5 times a day
Grind the part to be used and apply as a poultice	R16	*Carica papaya* (bark)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	Once a day until healed
	R17	*Anogeissus leocarpus* (bark + root)	Cervico-facial cellulitis	1	3 times a day until healed
Extract the juice and apply topically with cotton wool	R18	*Citrus aurantium* (fruit)	Caries; periodontal disease	1	Once a day until healed
Infusion of the plant powder; Administer as a mouthwash.	R19	*Datura metel* (fruit+seed)	Caries; cervico-facial cellulitis; lesions of the oral mucosa	1	3 3 times per day until cured
	R20	*Capsicum frutescens* (fruit)	Caries	1	
	R21	*Detarium senegalense* (root bark)	cervico-facial cellulitis; periodontal disease	1	2 times a day until healed
Apply freshly rolled organ and apply topically	R22	*Hyphaene thebaica* (stem)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	

	R23	*Ricinus comminus* (root)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	
	R24	*Allium sativum* (fruit)	Caries; cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	
	R25	*Azadirachta indica* (seed)	Caries; cervico-facial cellulitis; periodontal disease	1	
	R26	*Allium tricoccum* (leaves or fruit)	Caries, cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	Single socket
	R27	*Haematostaphis barteri* (leaf + bulb)	Caries; cervico-facial cellulitis	1	
	R28	*Ricinus communis* (root)	Lesions of the oral mucosa	1	2 times per day until healed
	R29	*Balanites eagyptiaca* (stem)	Caries; cervico-facial cellulitis; lesions of the oral mucosa	2	
	R30	*Moringa oleifera* (root)	Caries; cervico-facial cellulitis; lesions of the oral mucosa	1	3 times a day until healed
	R31	*Ipomea batatas* (leaves)	Caries; cervico-facial cellulitis; periodontal disease	2	Once a day until healed
Calcination and absorption of smoke	R32	*Thevetia neriifolia* (seed)	Caries, cervico-facial cellulitis; periodontal disease; lesions of the oral mucosa	1	2 times in one day
Dry and pulverize the plant organ. Apply a pinch of this powder in the carious cavity or periodontal pocket	R33	*Boswellia dalzeilii* (bark + root)	Caries	1	Once a day until healed
	R34	*Jatropha gossypiifolia* (seed)	Caries; cervico-facial cellulitis	1	
	R35	*Acacia nilotica* (bark or seed)	Caries; cervico-facial cellulitis; periodontal disease	1	
	R36	*Acacia polyacanta* (bark) + African mistletoe)	Caries; cervico-facial cellulitis	1	Single socket
Extract the juice and make mouthwash	R37	*Citrus aurantium* (fruit)	Caries; cervico-facial cellulitis; lesions of the oral mucosa	1	3 times a day until healed
Decoction and steam bath administration	R38	*Sclerocarya birrea* (bark)	Caries; cervico-facial cellulitis; lesions of the oral mucosa	1	
Decoction and topical application	R39	*Haematostaphi sbarteri* (bark) + *Viscum congolense*	Painful teething	1	2 times a day
Maceration in water and 2 teaspoons of oil. Ear application of a	R40	*Gossipium barbadense* (leaf)	Caries; cervico-facial cellulitis	1	Single socket

Table III: List of therapeutic indications of identified recipes

Indications	**Number of recipes (R)**	**Percentage (%) revenue**	**Number of species (E)**	**Percentage (%) species (E)**
Caries	34	77,2	35	77,7
Periodontal disease	22	50,0	26	57,7
Cervico-facial cellulitis	34	77,2	39	86,6
Lesions of the oral mucosa	26	59,0	29	64,4
Painful teething	1	2,2	1	2,2
Halitosis	1	2,2	1	2,2

Medicinal plant organs used in the preparation of recipes

Various plant organs or drugs were used in the preparation of the proposed recipes. Roots (35.8%) followed by barks (20.9%) were the most used. However, there was also possibilities of association between different organs.

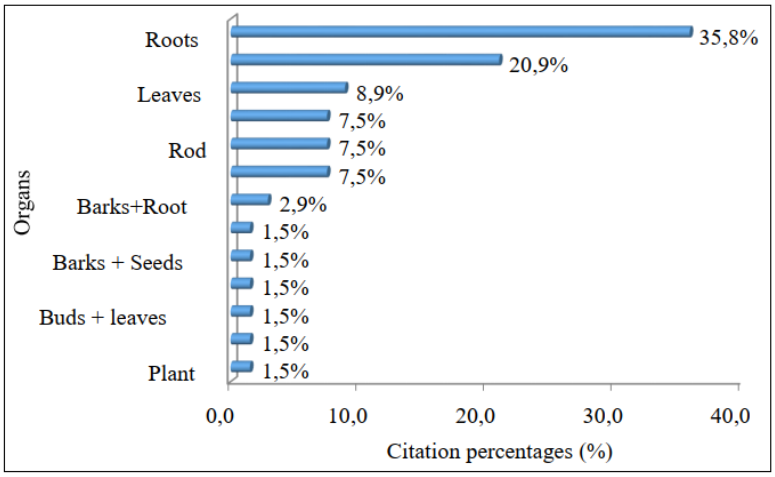

Figure 2: Organs used for the treatment of oral diseases

The preparation of the recipes

The recipes were prepared using various techniques, which include maceration, decoction, pounding/crushing, infusion, extraction and calcination (Figure 3). Decoction (43.2%) followed by pounding/spraying (20.5%) and extraction (20.4%) were the most prevalent.

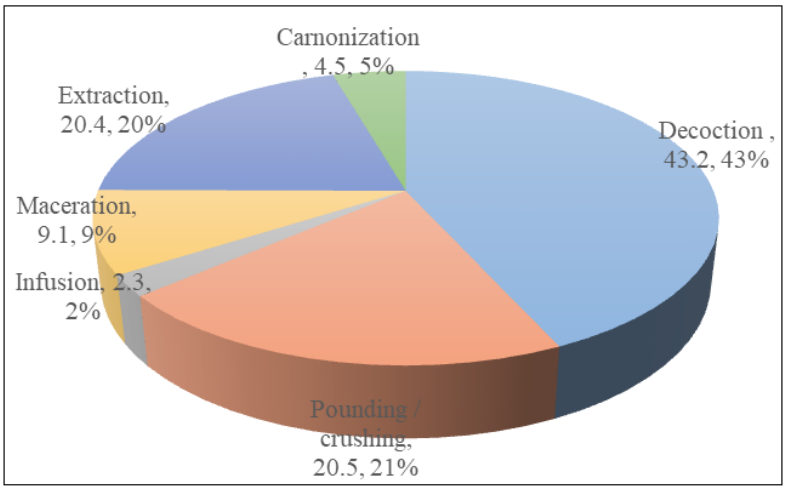

Figure 3: Recipe preparation methods

Methods of administration

In order to facilitate the administration of the active ingredients, several modes of administration were used. In all 50% of these recipes are administered by mouthwash, 43.2% by local application and 6.8% by fumigation.

Therapeutic interest of the medicinal plants

The citations and the number of recipes for each species identified showed that *Ricinus communus* (FC of 11.4%) was used for the preparation of three (03) recipes, followed by *sclerocarya birrea* (FC of 6.6%), used for the preparation of three (03) recipes were the medicinal plants of interest. Table IV lists the five (05) medicinal plants of interest.

Table IV: List of the five species of therapeutic interest

Species	Number of citations (N=61)	Frequency of citations (%)	Number of home recipes
Ricinus communis L.	7	11,4	3
Anogeissus leocarpus (DC.) Guill. & Perr.	3	5	3
Capparis facicularis DC.	3	5	1
Sclerocarya birrea (A.Rich.) Hochst.	4	6,6	3
Indigofera aff subargentea L.	3	5	3

DISCUSSION

This ethno pharmacological study was made possible through the collaboration of forty-three (43) traditional healers, thirty-eight (38) men and five (05) women. The unequal gender distribution might be justified by the fact that men are the heads of the family and therefore, are the guarantors of the family health [8]. The majority of these traditional healers were over forty (40) years old, which is similar to the work by Togola *et al.*, (2005) [9]. This may be justified by the fact that most of them became independent traditional healers only after the death of their mentor. Moreover, the fact that 69.8% of traditional medical knowledge comes from parents confirms this. Indeed, knowledge of traditional medicine is passed on from generation to generation in a much more oral/practical manner and therefore acquisition by inheritance is the most common process. The lack of theoretical documentation may thus be a shortcoming for the perpetuation of the ancestral medical knowledge. The scarce theoretical documentation may be attributed to the low or no level of education as noted in this study (44.5% of the respondents had no educational background).

The Mayo-Kani division, like all the divisions of the Far North Region of Cameroon, is characterized by a long dry season, generally covering nine (09) months out of twelve (12), during which, most plants are in physiological rest. Botanical diversity is limited, which would explain the lack of quality samples essential for the identification of certain species mentioned. *Mimosaceae, Euphorbiaceae, Combretaceae, Anacardiaceae, Solonaceae, Fabaceae,* and *Anthericaceae* were the most represented botanical families in this study. These families were part of the medical species used in the treatment of oral pathologies in general and some have presented a beneficial pharmacological activity against germs involved in oral pathologies [10-12]. The identified medicinal plants were involved in the preparation of forty (40) recipes. They were prepared from one or more plants or plant organs. Our findings are similar to the work reported by Zoughah *et al.*, (2019) [13]. In the majority of cases, a recipe was used for the treatment of at least two oral pathologies, which would be explained by the diversified composition of the different plant extracts in secondary metabolites with antalgic, anti-inflammatory, antifungal and antibiotic properties. Dental caries and cervico-facial cellulitis were the most treated pathologies because they are the most frequent oral pathologies where germs involved are known to be treated with the largest number of recipes and medicinal plants available in rural areas [14].

The interest in roots and barks is linked to the long dry season in this part of the country, during which most species lose their leaves. Similar to previous studies by Focho *et al.*, (2009) and Dibong *et al.*, (2011), we found that the most common method of preparation was the decoction. It would be the most effective way to extract and assimilate the active principles ingredients. However, although boiling a plant extract may affect the amount of active ingredients, it is also worth mentioning that decoction is preferred for the part of the plant that is harder and thicker (root, bark), and the possibility that heat may remove the toxicity of a plant is an [13].

We found that most preparations were mostly administered in topical form (mouthwash and topical application). Zougagh *et al.*, (2019) have also reported that mouthwash was the most requested route of administration in oral care. Indeed, the mouthwash would be the easy-to-use form and would allow access to difficult areas of the oral cavity.

Of the forty (40) species identified, the following species were of interest: *Ricinus communis*, *Sclerocarya birrea*, *Indigofera aff subargentea*, *Capparis facicularis*, *Anogeissus leocarpus.* Two (02) of these species namely *Sclerocarya birrea and Anogeissus leocarpus* are known for their uses in hygiene (toothpaste) and treatment of oral pathologies [11, 12]. Besides, plant extract of those plants have been found to possess flavonoids, alkaloids, terpenes, saponosides, and tannins, secondary metabolites known to act on certain germs responsible for pathologies of the oral cavity [17-20].

CONCLUSION

To treat oral diseases, the healers of the Mayo-Kani division proposed some forty-plant species belonging to twenty-eight botanical families, which were identified in the Cameroonian national herbarium. These species were used in the preparation of 40 recipes, primarily to treat caries and its complications. The main plant of interest was *Ricinus communis*. Phytochemical, pharmacological and toxicological studies should be conducted on all these plants in order to understand, promote or restrict their use.

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