

Medicinal plant recipes used in the management of peptic ulcers in Burkina Faso: Ethnobotanical study

Armandine LEMA ^{1, 2, *}, Mindiédba Jean BANGOU ^{1, 2}, Mamadou SAWADOGO ^{1, 2}, Hyacinthe Mindiempo THIOMBIANO ^{1, 2} and Hermann Yempabou OUOBA ^{1, 3}

¹ Department of Biochemistry and Microbiology, University of Nazi BONI, 01 BP 1091 Bobo-Dioulasso 01, Burkina Faso.

² Laboratory for Research and Education in Animal Health and Biotechnology, University of Nazi BONI, 01 BP 1091 Bobo-Dioulasso 01, Burkina Faso.

³ University Joseph Ki-Zerbo, Life and Earth Sciences Training and Research Unit, Laboratory of Plant Biology and Ecology, University of Nazi BONI, 03 BP 7021 Ouagadougou 03, Burkina Faso.

Abstract

Introduction: Peptic ulcer is a real public health problem in both developed and developing countries.

Objective: The present study is part of the establishment of a catalog of medicinal plant recipes with antiulcer activity in four cities of Burkina Faso.

Methodology: The method of approach was an ethnobotanical survey carried out among traditional health practitioners. It consisted in the preliminary drafting of questionnaires allowing the collection of socio-demographic and ethno-pharmacological data. This was a semi-structured interview with each traditional practitioner. The snowball technique was also used. The collection of our data was carried out in a single pass.

Results: At the end of the study, 290 traditional health practitioners were surveyed, with a predominance of men (69.66%) over women (30%). Likewise, 279 recipes of medicinal plants used in the treatment of peptic ulcers were identified. These recipes are made up of 113 species belonging to 48 botanical families. The most represented families were Caesalpiniaceae (9 species) and Combretaceae (8 species). Bark (31%), roots (25%) and leaves (24%) were the most used organs. The decoction (70%) was the predominant mode of preparation and was mainly administered orally (47%).

Conclusion: This study constitutes a very valuable source of information for further research in the field of phytochemistry and pharmacology in order to develop improved traditional anti-ulcer drugs.

Keywords: Peptic ulcer; Ethnobotanical survey; Medicinal plant recipes; Traditional health practitioners.

1. Introduction

Peptic ulcer disease is a condition resulting from an imbalance between the body's defense factors and aggressors [1]. Studies have shown that 98% of cases are due to a bacterium called *Helicobacter pylori* [2]. Other mechanisms such as: stress, alcohol consumption, smoking and non-steroidal anti-inflammatory drugs... also trigger ulcers [1, 3, 4]. According to some investigations, about 80% of subjects are infected from childhood and remain so throughout life [1, 5]. Every

* Corresponding author: Armandine LEMA

Department of Biochemistry and Microbiology, University of Nazi BONI, 01 BP 1091 Bobo-Dioulasso 01, Burkina Faso.

year in France, there is an increase in the number of ulcer cases. According to the work of Oueldelhachemi [6], this increase has been estimated between 60 and 80,000 new cases per year which would correspond to about 4 million adults potentially carrying a duodenal ulcer disease. Appropriate anti-ulcer treatment consists of pain relief, accelerating mucosal healing and combating disease-causing germs to prevent recurrence [2]. There are many treatments for example antibiotics, antisecretory drugs, antacids and surgery offered by modern medicine [6]. But these treatments are at exorbitant costs and are not accessible to the majority of rural populations who use traditional medicine as an alternative [7]. Indeed, medicinal plants are a valuable source of many medicines. It is estimated that at least 25% of all modern medicines are derived, directly or indirectly, from medicinal plants, mainly through the application of modern technologies to traditional knowledge [8]. Authors have shown that nearly 80% of the African population use local plants for their primary health care [8-10]. Indeed, according to Béné *et al.* [11], the effectiveness of herbal medicine has been demonstrated and its benefits undeniable. Since, these medicinal plants contain an immense source of biomolecules capable of mitigating the effects induced by oxidative stress. In Africa, the knowledge concerning medicinal plants is mostly held by the elderly and they rarely transmit their knowledge. Their disappearance corresponds to an important loss of profitable information. It is therefore important to conduct studies aimed at documenting and safeguarding traditional pharmacopoeia knowledge [12]. It is with this in mind that we set ourselves the general objective of identifying the recipes of medicinal plants used in the treatment of peptic ulcers among traditional health practitioners.

2. Methodology

2.1. Presentation of the study areas

The ethnobotanical study was conducted in four (04) cities of Burkina Faso, namely: Bobo-Dioulasso, Boromo, Dédougou and Fada N'Gourma (Figure 1). It focused mainly on medicinal plant recipes used in the treatment of peptic ulcers. The parameters that justified our choice of these localities were: accessibility to information, ease of communication, proximity to cities and the number of traditional health practitioners.

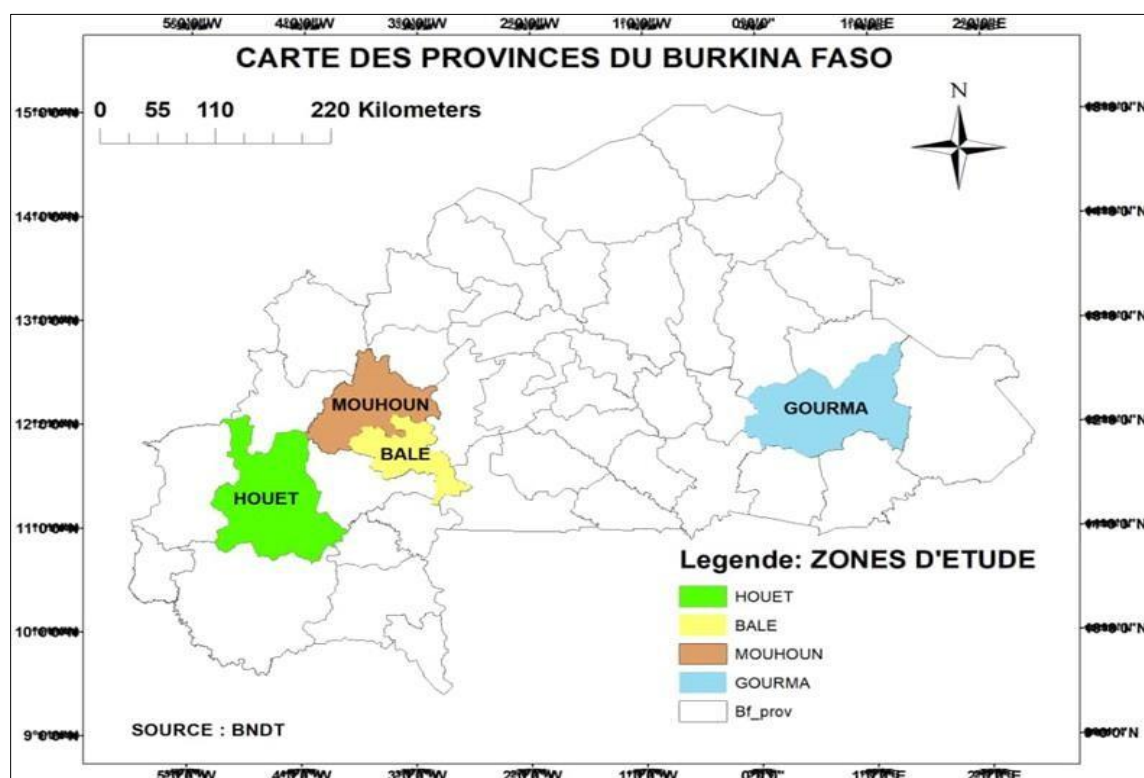


Figure 1 Mapping of study cities

2.2. Methodological approach

This was a series of ethnobotanical surveys, a prospective cross-sectional study, with a descriptive aim from 15 May to 20 September 2021. Data collection was carried out according to the method described by Jazy *et al.* [12], with slight modification. Survey sheets were used to collect sociodemographic and ethnobotanical data. The survey was conducted among traditional practitioners who agreed to participate in the study, describing their various plant-based recipes. This was a semi-structured interview with each traditional practitioner and the "snowball" technique was equally used. The data was collected in a single pass either at the home level or at the level of their service. The approach of the traditional healers was based on dialogue in local or French languages.

2.3. Data processing

The data collected on the survey forms were of two types, socio-demographic and ethnobotanical. At the end of the study, all of these data were entered into Microsoft Excel 2016. The following parameters were studied: age, sex, number of years of experience, level of education, botanical family, part of the plant used, method of preparation and administration.

3. Results and discussion

3.1. Socio-demographic data

3.1.1. Distribution of respondents by study area

A total of 290 traditional practitioners were interviewed (Figure 2). The results show a predominance of traditional practitioners in the cities of Bobo-Dioulasso and Fada N'Gourma. This unequal distribution could be explained by the non-availability of traditional practitioners in the cities of Boromo and Dédougou. In fact, we conducted our surveys during the winter season and most of the respondents were farmers.

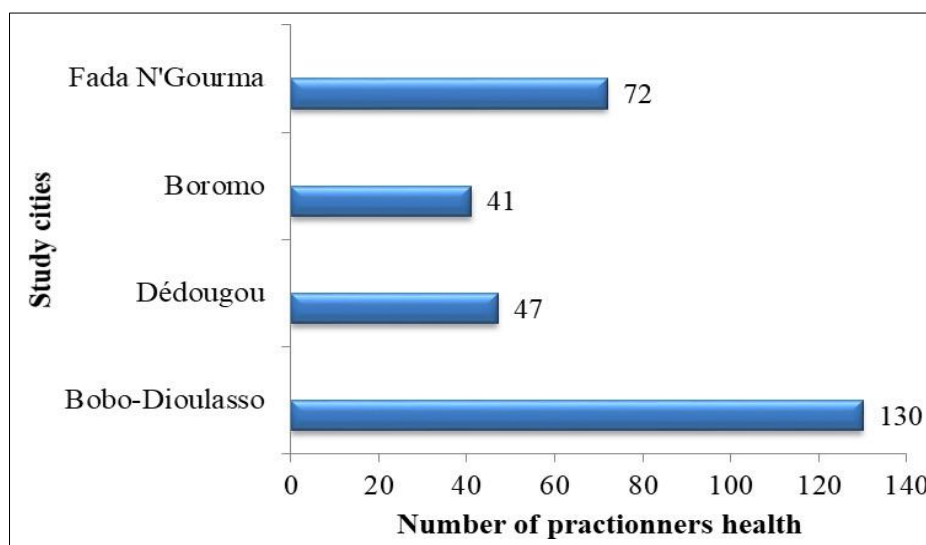


Figure 2 Distribution of respondents by study cities

3.1.2. Distribution of respondents by gender

Medicinal plants are used by both men and women. The male gender predominates, i.e. 69.66% of men against 30% of women (Figure 3). The same observation is made by Gnagné *et al.* [13] who in their work in Ivory Coast also noted a strong predominance of the male gender (65%). This superiority could be due to the social and cultural barriers that men have erected against women. However, a good knowledge of the pharmacopoeia by women will save many lives, especially those of children in households.

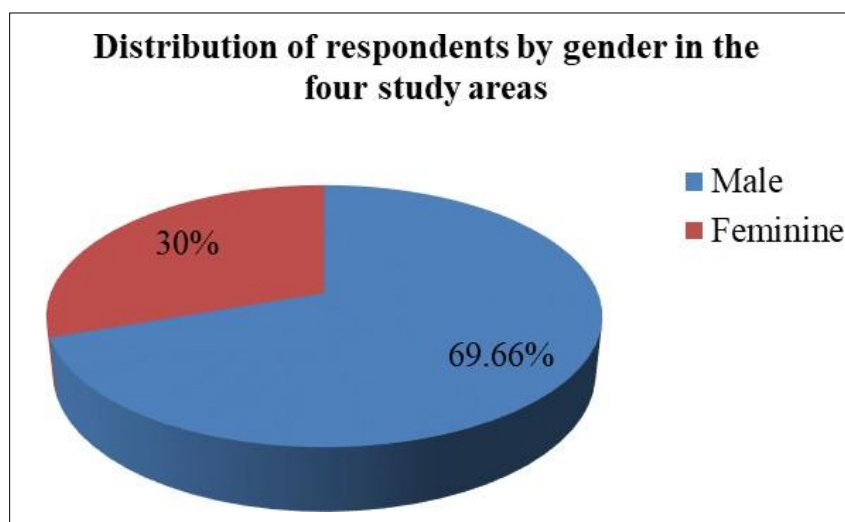


Figure 3 Distribution of respondents by gender

3.1.3. Distribution of respondents by level of education

We collected information from both literate and non-literate traditional healers (Figure 4). However, we note that the majority of respondents are illiterate. The same observation was made by Guinnin *et al.* [14], who in their work in Benin on medicinal plants used in the traditional treatment of viral hepatitis B and C, showed that nearly 90% of the traditional practitioners surveyed were illiterate. According to the same authors, this finding could be explained by the fact that the use of medicinal plants remains the prerogative of poor people [13, 14].

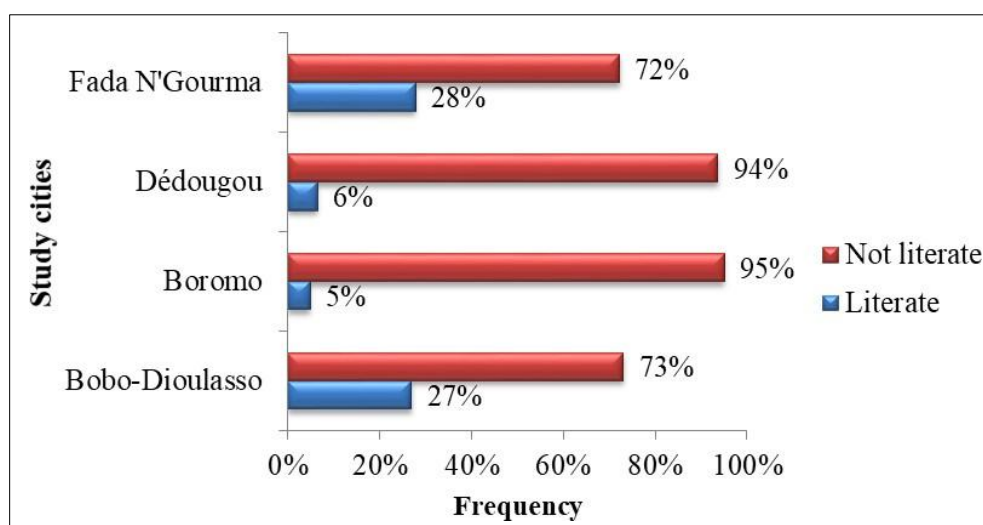


Figure 4 Distribution of respondents by level of education

3.1.4. Age distribution of the subjects surveyed

In the Boromo city, people aged 60 to 79 years have a high frequency of use of medicinal plants, i.e. 60.98%. The age distribution also shows that traditional practitioners in the 40-59 and 60-79 age groups in the Dédougou and Bobo-Dioulasso cities have an average frequency of use of medicinal plants, i.e., 44.68% and 43.08% respectively (Figure 5). The majority of the subjects surveyed were of middle age. The same finding was made by other authors such as Gnagné *et al.*; Olou *et al.* [13, 15]. This result could be explained by the conservation of endogenous knowledge by the elderly [16].

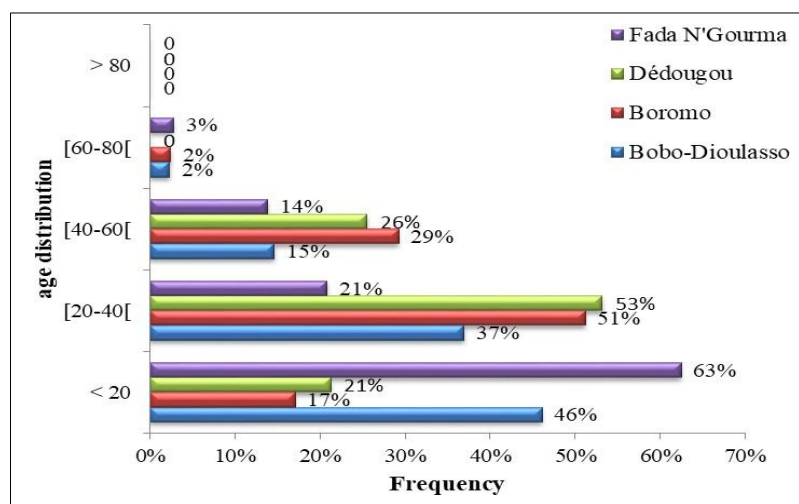


Figure 5 Distribution of the subjects surveyed according to age

3.1.5. Distribution of surveyed subjects by professional experience

All of the traditional practitioners surveyed have at least three years of experience and the majority has more than 20 years of experience (Figure 6). In addition, these respondents claim to have inherited knowledge of medicinal plants from their parents. Studies have shown that experience accumulated with age is the main source of information at the local level. Most importantly, it has been recognized that in Africa, it is the elders, i.e., the oldest people, who hold the traditional knowledge of treating diseases [17, 18].

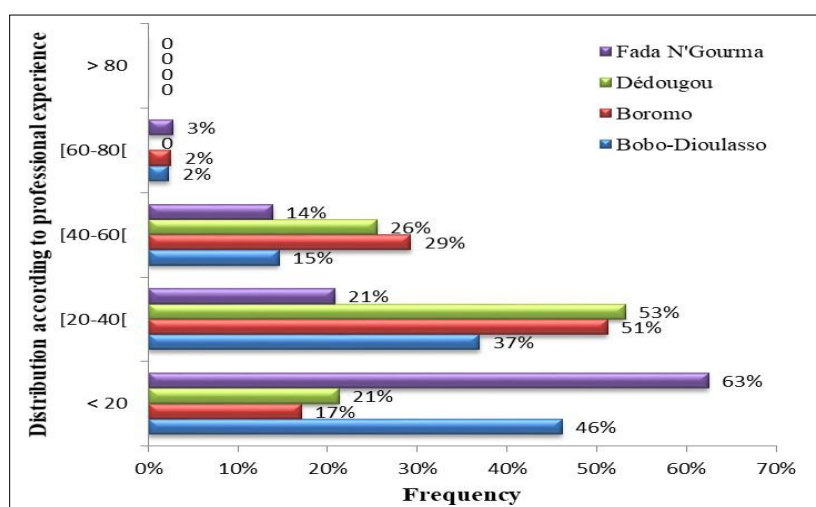


Figure 6 Distribution respondents according to professional experience

3.2. Ethnobotanical data

3.2.1. Distribution of medicinal plants by parts used

The parts most used by the surveyed traditional health practitioners in the preparation of recipes were barks (31%), roots (25%) and leaves (24%) (Figure 7). The high use of bark could be due to the richness of this organ in chemical substances since the bark is the communication pathway between the roots and the leaves Dongock *et al.* [16]. According to the same author, the roots are used because their underground positions would favor the conservation of highly light-labile active substances. Also the great solicitation of the leaves in traditional medicine, finds its reason in their richness in active substances. Tahri *et al.* [19] also reports that the leaves are the parts of the plant most used by traditional practitioners. This can be explained by the fact that photosynthesis or the manufacture of all active substances takes place in the leaves [20, 21] and also by the ease and speed of harvesting [19, 21].

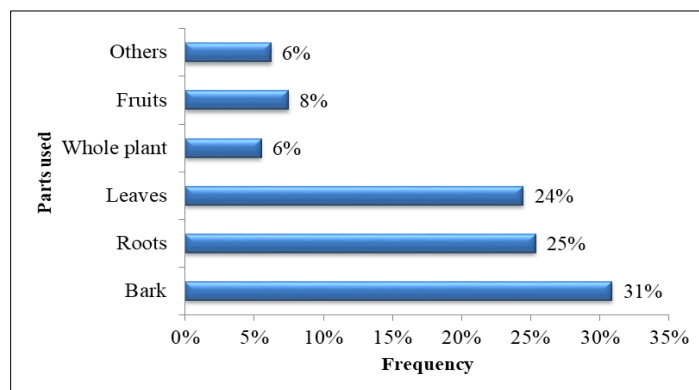


Figure 7 Distribution of medicinal plants according to the parts used

3.2.2. Distribution of medicinal plants according to the mode of use

In traditional medicine, there are several modes of preparation of the recipes. The decoction (70%) and the powder (21%) were the most used modes. Indeed, decoction allows collecting the most active principles and attenuates or cancels the toxic effect of some recipes [19, 22]. The preparation of recipes is mono specific or in combination of several species.

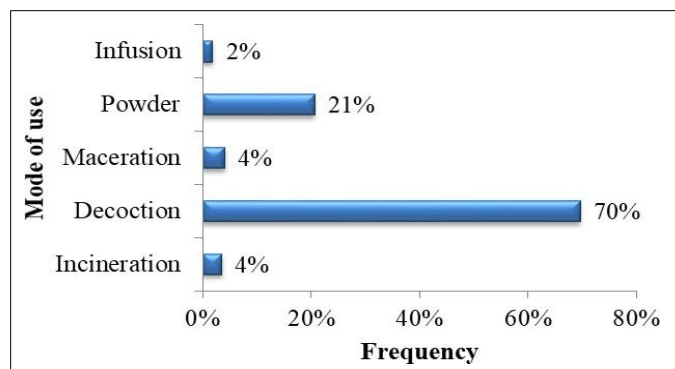


Figure 8 Distribution of medicinal plants according to the mode of preparation

3.2.3. Distribution of medicinal plants by mode of administration

Different modes of administration are used. The administration by drink (47%) and bath (28%) were the most used modes (Figure 9). Administration by drink could be due to the simplicity of this mode [22] and also by the fact that the drugs being in crude form, the oral route could prove to be the least dangerous [10].

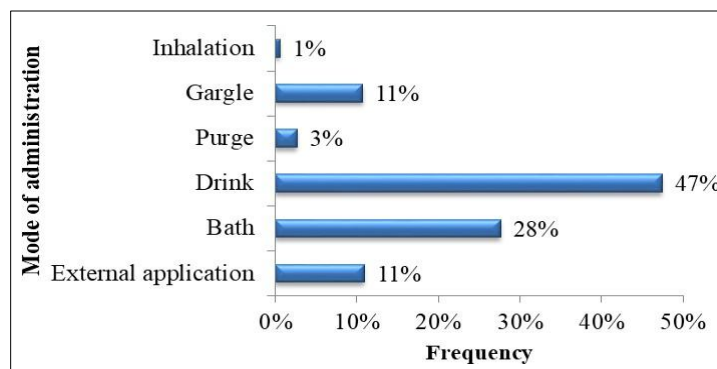


Figure 9 Distribution of medicinal plants by mode of administration

3.2.4. Distribution of species, families, and recipes in the different study cities

Several remedies based on medicinal plants are proposed by traditional practitioners to treat ulcers. These plants are used in combination or alone. In Bobo-Dioulasso, the surveys enabled the inventory of 279 recipes and 89 species belonging to 46 botanical families. In Boromo, 38 recipes and 22 species belonging to 17 families were identified. Also in Dédougou, we have identified 108 recipes, 33 species all belonging to 20 families. Finally, in the Fada N'Gourma city, we collected 137 recipes, 53 species also belonging to 27 botanical families. The most represented families were the Caesalpiniaceae (9 species) and the Combretaceae (8 species). A high proportion of medicinal species was observed in the different study cities, which could be explained by the richness and diversity of the flora of these localities [16].

Table 1 Distribution of species involved in the different recipes

Families	Species	The parts used	Other pathologies treated	References
Anacardiaceae	<i>Lannea acida</i> A. Rich.	Bark	Stomach-aches, hypertension, diarrhea, gonorrhea, rheumatism, malaria, anemia, hemorrhoids	[23-25]
	<i>Lannea microcarpa</i> Engl. & K. Krause	Bark	Malaria, diarrhea,, hypertension	[24]
	<i>Lannea velutina</i> A. Rich	Bark	Hypertension	[24]
	<i>Mangifera indica</i> L.	Bark	Diarrhea, hemoroid disease, candidiasis, anemia, rhino-bronchitis	[25-27]
	<i>Sclerocarya birrea</i> (A.Rich.) Hochst.	Bark	Cough, malaria, stomach-aches, dermatosis, diabetes, treatment of cardiovascular diseases	[16, 28]
Annonaceae	<i>Annona senegalensis</i> Pers	Roots	Diarrhea, colic, stoppage of the fontanel, painful rule, sexually transmitted infection	[26, 29-31]
	<i>Annona squamosa</i> L.	Leaves	Stomach-aches, diabetes, diarrhea, dysentery, malaria	[32]
	<i>Xylopia aethiopica</i> (Duna)	Fruits	Diarrhea, infection treatment, candidiasis, colic, rhino-bronchitis, eruptive fever	[26]
Apocynaceae	<i>Saba senegalensis</i> (A. DC.) Pichon	Fruits	Colic, stoppage of the fontanel	[26]
Arecaceae	<i>Borassus akeassii</i> Bayton, Ouédra & Guinko	Leaves	Malaria, fever, teething, anal sores, muscle weakness	[33]
Asclepiadaceae	<i>Calotropis procera</i> (Aiton) R.Br.	Roots, leaves, fruits	Cough, general pain, dermatosis, painful rule, sexually transmitted infection	[30, 34]
	<i>Leptadenia hastata</i> (Pers.) Decne	Whole plant	Mental illness treatment	[35]

Continuation (01) of table 1

Asteraceae	<i>Acanthospermum hispidum</i> DC	Bark	Malaria, stomach-aches, pregnancy, jaundice, white loss, pregnancy	[36, 37]
	<i>Chysanthellum americanum</i> (L.) Vatke	Whole plant	Kidney disease, ulcer	[37, 38]

	<i>Chrysanthellum indicum</i> subsp Afro	Whole plant	Malaria	[36]
	<i>Eclipta alba</i> (L.) Hassk.	Whole plant	Malaria, diabetes, childhood diseases	[37]
	<i>Vernonia colorata</i> (Wild.) Drake	leaves	Malaria, fever, high blood pressure, diarrhea, jaundice	[37]
Balanitaceae	<i>Balanites aegyptiaca</i> (L.) Del	Bark, roots	Constipation, malaria, hypertension	[24]
Balanophoraceae	<i>Bobgunnia madagascariensis</i> (Desv.) J.H.Kirkbr. & Wiersema	Leaves	Malaria	[23]
Bignoniaceae	<i>Crescentia cujete</i> L	Fruits	Eruptive fever	[25]
Bombacaceae	<i>Adansonia digitata</i> L.	Bark	Fever, growth retardation, diarrhea, painful rule, sexually transmitted infection, anemia, delay in walking	[25, 26, 30]
	<i>Ceiba pentandra</i> (L.) Gaertn	Roots	Gastric ulcer	12]
Boraginaceae	<i>Heliotropium indicum</i> L.	Fruits	Treatment of childhood diseases	[25]
Bromeliaceae	<i>Ananas comosus</i> (L.) Merrill	Fruits	Treatment of intestinal worms, purification of the reproductive system, malaria, anemia, stomach-aches	[25, 30, 39]
Burseraceae	<i>Boswellia dalzielii</i> Hutch	Roots, bark	Fever, rheumatism, wounds, leprosy, hepatitis	[40]

Continuation (02) of table 1

Caesalpiniaceae	<i>Burkea africana</i> Hook	Bark	Edema, fever, dysentery, malaria	[41]
	<i>Cassia sieberiana</i> DC.	Leaves, roots	Stomach-aches, dermatosis, hypoglycemic	[26, 42]
	<i>Daniellia oliveri</i> (Rolfe)	Bark, roots	Female sterility, madness, constipation, jaundice, treatment of cardiovascular diseases	[16]
	<i>Detarium microcarpum</i> Guill. & Perr.	Roots, leaves	Hypertension, diabetes, malaria, stomach-aches	[24, 25, 42, 43]
	<i>Dialium guirensis</i> Willd.	Leaves	Dental caries, headache, cough, diarrhea, fever, colds, high blood pressure	[25, 42]
	<i>Senna alata</i> (L.) Roxb.	Leaves	Malaria, treatment of cardiovascular diseases	[16]
	<i>Tamarindus indica</i> L.	Leaves, bark	Varicella, constipation, asthenia, hemorrhoids, allergies	[12, 26]
	<i>Piliostigma reticulatum</i> (DC.) Hochst.	Bark	Diarrhea, cough, kidney diseases	[38, 16]
	<i>Piliostigma thonningii</i> (Schumach.) Milne-Redh.	Bark	Mycosis, hypertension	[24, 44]
Caparaceae	<i>Boscia angustifolia</i> A. Rich.	Leaves	Treatment of the mentally ill	[35]
Caricaceae	<i>Carica papaya</i> L.	Roots, leaves	Malaria, hypertention, hepatitis, diseases, malaria, stomach-aches, jaundice, sickle cell disease	[12, 25, 45]

Celastraceae	<i>Gymnosporia senegalensis</i> (Lam.) Loes	Leaves	Colic	[21]
Cochlospermaceae	<i>Cochlospermum planchonii</i> Hook. f. ex Planch.	Roots	Diarrhea, malaria	[23]

Continuation (03) of table 1

Combretaceae	<i>Anogeissus leiocarpus</i> (DC.) Guill. & Perr.	Bark, roots	Diarrhea, hypertention, malaria, anemia, candidiasis, teething	[24, 25]
	<i>Combretum micranthum</i> G. Don	Leaves	Candidiasis, diarrhea, acts, colds, diabetes, hypertension, anemia	[25, 42]
	<i>Combretum molle</i> R.Br	Leaves, bark	Diarrhea	[26]
	<i>Combretum nigricans</i> Lepr. ex Guill. et Perr.	Bark, leaves	Cardiovascular diseases	[16]
	<i>Guiera senegalensis</i> J.F. Gmel.	Leaves	Increase lactation	[21]
	<i>Pteleopsis suberosa</i> Engl	Leaves, bark	Malaria, candidiasis, teething, colic	[27]
	<i>Terminalia laxiflora</i> Engl	Roots	Dysentery, hemorrhoids, malaria	[46]
	<i>Terminalia macroptera</i> Guill & Perr	Bark, roots	Dysentery, diarrhea, malaria, hepatitis, fever, leper, tuberculosis, colic, hypertension	[47]
Ebenaceae	<i>Diospiros mespiliformis</i> Hochst. ex A. DC	Roots	Diarrhea, earache	[26]
Euphorbiaceae	<i>Euphorbia hirta</i> L.	Whole plant	Dysentery, diarrhea, stomach-aches	[26, 42]
	<i>Euphorbia poissonii</i> Pax	Whole plant	Caries and tooth extraction, cancer	[48]
	<i>Fluggea virosa</i> Roxb. ex Willd.	Leaves, roots	Infection treatment, malaria, rhino-bronchitis, splenomegaly, staphylococcal disease	[26]
	<i>Manihot esculenta</i> Crantz	Leaves	Inflammatory disorder, jaundice	[12,49]

Continuation (04) of table 1

Fabaceae	<i>Acacia albida</i> Del	Leaves	Hypertension	[24]
	<i>Afzelia africana</i> Sm.	Roots	Hypertension disease	[25]
	<i>Chamaecrista nigricans</i> (Vahl) Greene	Bark	Skin diseases	[50]
	<i>Pterocarpus erinaceus</i> Poir	Bark	Diarrhea, fatigue, col, anemia, bloody hemorrhoids	[42]
Lamiaceae	<i>Ocimum basilicum</i> L.	Leaves	Treatment of childhood diseases, the treatment of diabetes, cardiac and renal diseases, fever, mental disorder and stimulant	[19, 25,51]
Lauraceae	<i>Laurus nobilis</i> L.	Leaves	Treatment of microbial infections	[51]
Loranthaceae	<i>Tapinanthus dodoneifolius</i> (DC.) Danser	Leaves	Gynecologic disturbances, digestive disorders, nervous confusions	[52]
	<i>Tapinanthus globiferus</i> (A. Rich.) Van Teigh	Leaves	Rheumatoid arthritis	[53]

	<i>Martynua annua</i> L.	Leaves	Epilepsy, tuberculosis, sore throat	[54]
Lythraceae	<i>Lawsonia inermis</i> L.	Leaves	Jaundice, leprosy, diarrhea, candidiasis, rash fever	[25]

Continuation (05) of table 1

Malvaceae	<i>Abelmoschus esculentus</i> (L.) Moench	Leaves	Leucorrhoea, diarrhea, malaria, hypertension	[55]
	<i>Gossypium herbaceum</i> L.	Fruits	Diarrhea, dysentery, rheumatoid arthritis	[56]
	<i>Sterculia setigera</i> Delile	Roots bark	Vomiting, constipation, diarrhea	[42]
	<i>Walteria indica</i> L.	Whole plant	Malaria, anemia, teething, colic	[25]
Meliaceae	<i>Azadirachta indica</i> A. Juss.	Bark	Malaria	[11]
	<i>Khaya senegalensis</i> (Desr.) A. Juss.	Leaves, roots, bark	Malaria, candidiasis, teething	[25]
	<i>Pseudocedrela kotschyi</i> (Schweinf.) Harms	Roots	Muscle bruises, internal wounds, toothache, malaria, rash fever	[25]
	<i>Trichilia emetica</i> Vahl	Leaves, roots, bark	Malaria	[41]
Mimosaceae	<i>Acacia amythethophylla</i> Steud. ex A. Rich.	Bark	Necrosis, viraleskin nodule	[57]
	<i>Acacia nolitica</i> (L.) Willd. ex Del.	Fruits	Dysentery, bloating, earache, candidiasis, colic, rhino-bronchitis	[25, 26]
	<i>Acassia seyal</i> DC.	Roots	Urological disorders	[21]
	<i>Acacia polyacantha</i> Willd.	Bark	Tooth decay, malaria, sore throat, cough	[23]
	<i>Acacia tortilis</i> subsp.	Roots	Dermatosis, asthma, wounds, stomach-aches	[21]

Continuation (06) of table 1

Mimosaceae	<i>Cassia alata</i> L.	Leaves	Malaria, constipation, dermatitis	[11]
	<i>Dicrostachys cinerea</i> (L.)	Bark	Cough, earache, toothache	[23]
	<i>Entada africana</i> Guill. & Perr.	Leaves, roots	Treatment of cardiovascular diseases	[16]
	<i>Parkia biglobosa</i> (Jacq.)	Roots, bark	Diarrhea, measles	[26]
Moraceae	<i>Ficus carica</i> L.	Bark	Treatment of cardiovascular diseases	[16]
	<i>Ficus ingens</i> (Miq.) Miq.	Bark	Dermatological disorders	[21]
	<i>Ficus platyphaylla</i> Delile	Bark	Mental illness treatment	[35]
	<i>Ficus polita</i> Vahl	Roots	Diarrhea, Treatment of cardiovascular diseases	[16]
	<i>Ficus thonningii</i> Blume	Bark	Cough, cold, rickets, fever, hepatitis, rheumatism	[26]
Moringaceae	<i>Moringa olivera</i> Lam.	Leaves	Malaria, hemorrhoids	[25]
Musaceae	<i>Musa acuminata</i> Colla.	Leaves	Malaria	[39]
Myrtaceae	<i>Eucalyptus camaldulensis</i> Dehnh.	Leaves	Cold, bronhitis, sickle cell, crisis, anemia	[12]
	<i>Psidium guajava</i> L.	Leaves	diarrhea, malaria, diabetes	[27]
	<i>Syzygium aromaticum</i> (L.) Merr.	Fruits	Stomach-aches, hemorrhoids, asthma	[25]

Continuation (07) of table 1

Ochnaceae	<i>Lophira lanceolata</i> Van Tiegh. ex Keay	Bark	Treatment of childhood diseases, malaria	[25]
Olacaceae	<i>Ximenia americana</i> L.	Roots	Dysentery, sore eye, mouth wounds, rheumatism, diarrhea	[23, 24]
Opiliaceae	<i>Opillia amentaceae</i> Roxb	Bark	Diabetes	[58]
Orobanchaceae	<i>Striga hermontheca</i> (Del.) Benth.	Whole plant	Treatment of bacterial infections	[59]
Poaceae	<i>Cymbopogon citratus</i> (DC.) Stapf	Whole plant	Fever, malaria, sexual weakness, yellow fever, malaria	[11, 25, 60]
	<i>Cymbopogon schoenanthus</i> (L.) Spreng	Whole plant	Hypertension	[24]
	<i>Bambousa vulgaris</i> Schard. Ex J. C. Wendl.	Leaves	Typhoid fever, hypertention, anorexia	[11]
	<i>Sorghum bicolor</i> (L.) Moench.	Seeds	Treatment of cardiovascular diseases	[16]
	<i>Zea mays</i> L.	Beard	Fever, common cold, treatment of cardiovascular diseases	[16]
Polygalaceae	<i>Securidaca longipedunculata</i> Fres.	Leaves, roots	Malaria, bloating, Wounds, infected eruption, intestinal worms, candidiasis, rhino-bronchitis, stomach-aches, splenomegaly	[23, 25]
Rhamnaceae	<i>Zizifus mauritiana</i> Lam.	Roots	Stomach-aches, hypertension	[25]
Rubiaceae	<i>Gardenia aqualla</i> Stapf & HUTCH	Fruits	Treatment of germs	[61]

Continuation (08) of table 1

Rubiaceae	<i>Gardenia ternifolia</i> Schumach & Thonn	Bark	Hypertension, sickle cell disease, diabetes	[62]
	<i>Mitragyna inermis</i> (Wild.) K. Schum	Leaves	Urological, dermatological disorder	[21]
	<i>Sarcocephalus latifolius</i> (Sm) E. A: Bruce	Roots, bark	Malaria	[42, 39]
Rutaceae	<i>Zanthoxylum zanthoxyloides</i> (Lam.)	Bark	Malaria, candidiasis, colic, stomach-aches	[25]
Sapotaceae	<i>Vitellaria paradoxa</i> C. F. Gaertn.	Bark	Dysentery, common cold, diarrhea, teething, colic, rhino-bronchitis	[25]
Scrophulariaceae	<i>Scoparia dulcis</i> L	Whole plant	Fear of heights	[11]
Sterculiaceae	<i>Cola nitida</i> (Vent) Schott. & En.	Fruits	Facilitates childbirth	[11]
Tiliaceae	<i>Grewia bicolor</i> Jusss.	Leaves	Respiratory and dermatological diseases	[63]
Verbenaceae	<i>Lippia chevalieri</i> Moldenke	Whole plant	Physical asthenia, sedative	[11]
	<i>Tectona grandis</i> L. f.	Roots	Anamia, sickle cell disease	[26]
	<i>Vitex doniana</i> Swect	Bark	Diarrhea, acts	[25]

Zingiberaceae	<i>Aframomum melegueta</i> (Roscoe) K. Schum.	Leaves	Treatment of childhood diseases, uterine fibroids, malaria, rash fever, depression	[25,30]
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4. Conclusion

Our study represents an inventory of medicinal plant recipes used in the treatment of peptic ulcers in four (04) cities in Burkina Faso. This study allowed the collection of interesting ethnobotanical data from the respondents. These data collected could help avoid the loss of endogenous knowledge on the use of medicinal plants held by traditional health practitioners. They also represent preliminary information for a more in-depth study on the most commonly used medicinal plants. This study will allow for the development of improved traditional anti-ulcer medicine accessible to all.

Compliance with ethical standards

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Disclosure of conflict of interest

Armandine LEMA, Mindiériba Jean BANGOU, Mamadou SAWADOGO, Hyacinthe Mindiempo THIOMBIANO and Hermann Yempabou OUOBA declare that there is no conflict of interest in relation to this article.

Statement of ethical approval

This research does not contain any studies performed on animal/human subjects by any of the authors.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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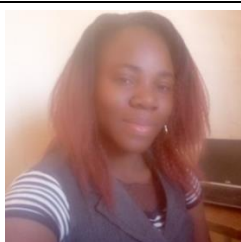
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Author short biography



Armandine LEMA is Biochemist by training at the Nazi BONI University of Bobo-Dioulasso. She was born on December 28, 1992 in Lah (Burkina Faso). In 2020, she obtained her Master's degree in Biochemistry and Chemistry of Natural Substances. She is pursuing her PhD in the same field. She author of an article entitled: "Ethnobotanical study, phytochemistry and antioxidant activity of medicinal plants used in the treatment of inflammation in two cities of Burkina Faso". She is also co-author of two other articles.