



Contribution to Ethnobotanical Knowledge of some Euphorbiaceae used in Traditional Medicine in Lubumbashi and its surroundings (DRC)

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ABSTRACT:

Some ethnobotanical information on 53 Euphorbiaceae plant species were collected in ethnobotanical results of surveys carried out in Lubumbashi (DR Congo) and its surroundings from 2000 to 2012. These Euphorbiaceae species surveyed belong to 5 biological types whose mesophanerophytes (38%), microphanerophytes (34%), nanophanerophytes (13%), therophytes (9%) and Chamaephytes (6%). The majority of these plant species are growing in the miombo and forest gallery. These results also show that the roots or their bark (32.75%), the stems or their bark (28.65%) and leaves (26.32%) are the most used parts of plants in traditional medicine. The decoction (43.57%) is the most preparation routes of drug recipes and the drink (43.57%) and the local application (19.29%) are the most used administration routes. Various diarrheal diseases occupy the first place among the treated diseases with a rate of 11.39%, followed by sexually transmitted diseases (10.62 %), various wounds (5.6 %) and abdominal pains (4.05 %).

Keyword: Ethnobotany, Euphorbiaceae, Surveys, traditional medicine, drugs recipes

INTRODUCTION

The health is a major concern of every human society. Habitually, for their health, people recourse to biomedicine and to traditional medicine. Biomedicine is an important therapeutic system of developed countries and urban areas in developing countries. It gets remarkable results in many cases; however, it still creates barriers to accessibility in some rural areas because of the high cost of health care, much maligned toxicity of some of its molecules, the resistance of some microorganisms against certain drugs and the emergence of some uncontrolled diseases such as Aids, cancer or haemorrhagic fever. All these reasons lead the patient to resort to traditional medicine [1-5]. Indeed, African traditional medicine is gaining momentum today and it is confirmed more and more as an alternative to modern medicine. Moreover, the contribution of African traditional medicine to universal treatment is well established [4-6].

Modern medicine is based on scientific experiments more easily testable and reproducible, but African traditional medicine refers to another conception of disease, the human body or whole man. It is more difficult to assess based on modern concepts. Traditional medicine has a number of rationality problems namely the lack information on secondary effects, the toxicity of plants used and the precise dose of drug recipes to be administered. Though, traditional medicine provides full treatment, is less expensive because of the easy access to plants, the main source of supply of medicinal recipes [2,3].

Surveys carried out among traditional healers allow to obtain information on pathologies treated, ingredients used to prepare drug recipes, preparation route, administration route and the dose of the drug recipes. Indeed, ethnobotanical information is at the origin to the discovery of the interesting plant species that led to

the demonstration of significant active molecules. The preparation of traditional medicines involves different plant organs, rarely insects or animal organs to prepare drug recipes [7].

The Euphorbiaceae belongs to Euphorbiales order, monochlamydae subclass, dicotyledonous class (Magnoliopsida), Angiospermae subdivision and Spermatophyta division. This family includes, in average 7500 species divided into 275 genera. These are classified into 45 tribes grouped and into five subfamilies, namely Acalyphoideae, Crotonoideae, Euphorbioideae, Oldiphylloideae and Phyllanthoideae. They are ubiquitous except in the Alps and the Arctic regions; they are tropical in the majority [8-9]. It is a family that has some economic importance with representatives such as *Hevea brasiliensis* for natural rubber, *Ricinus communis* for the lubricant oil and *Manihot esculenta* for food. Some Euphorbiaceae are widely used in traditional medicine in the preparation of medicinal recipes. However, it may be noted that certain types of species are toxic, such as genus *Excoecaria*, *Hyaenanche*, *Manihot* and *Sapium* [10]. Their toxicity can manifest as well with flowers, leaves, fruits, latex and roots [11-12]. The literature mentions sixty Euphorbiaceae identified in Democratic Republic of Congo (DRC) of which fifty are found in Katanga province [13-16].

This study resumes ethnobotanical knowledge of 53 species, belonging to Euphorbiaceae which is the plant family among the most used families in traditional medicine in Lubumbashi and its surroundings by local traditional healers.

EXPERIMENTAL

Study area

Lubumbashi is the capital of the province of Katanga located in the south-eastern part of DRC. This city is located in the south of the DRC and the Province of Katanga, with an estimated population of 2 million inhabitants in 2010 [17].



Ethnopharmacological survey

From 2000 to 2012, we conducted several surveys in Lubumbashi on medicinal plants with around 230 people resources: the survey on plants treating sexually transmitted diseases (2000 and 2005), on medicinal plants and traditional medicine (2004), on anti-diarrhoeal plants (2004 and 2012), on anti-diabetic plants and antisickling cell anemia plants (2011). During these surveys, 260 medicinal plant species belonging to 132 families have been identified whose Euphorbiaceae are the

most used in the preparation of traditional drug recipes.

During these ethnopharmacological surveys, the name of the plants, the plant parts [Root (**R**), Fruit (**Fr**), leaf (**Le**), Stem (**St**), Bark Root (**Br**), Bark Stem (**Bs**), Seed (**S**), Oil (**O**), Whole plant (**Wp**), Sap (**Sa**)], modes of preparation and modes of administration of recipes were recorded. Plants were collected and identified at the herbarium of the Laboratory of Phytogeomorphology and Ecology of Faculty of Sciences at the University of Lubumbashi in DRC. The plants ecological status was also determined. Vouchers specimens are stored at the same herbarium.

Floristic Characterizations of plants Collected

In this work, medicinal plants used in traditional medicine of Lubumbashi are characterized by their morphological types, biological types and habitat types. The morphological types were inventoried as following: Herb (**Her**), Shrubs (**Shr**), Medium dominant Tree (**Trm**) and Trees (**Tr**). Biological types below have been selected: Chamaephytes (**Ch**), Mesophanerophytes (**MsPh**), Microphanerophytes (**McPh**), Nanophanerophyte (**NnPh**) and Therophytes (**Th**) as classified by Raunkiaer (1934) adapted to tropical regions by Lebrun (1960). Only the most characteristic habitat of each plant species is indicated. The types of habitats retained in this work are therefore: Clear forest (**Fcl**), Forests (**For**), Gallery Forest (**Fog**), Fallow (**Fal**), Farms or crops which are cultivated species (**Cult**), Ornamental (**Orn**), Ruderal or plants found in the village (**Rud**), Savannah (**Sav**) and Termitary (**Tar**) [18-19].

RESULTS AND DISCUSSION

Fifty-three Euphorbiaceae were identified in the traditional recipes preparation used as the drug for the treatment of various pathologies. These plants are arranged in alphabetical order of genus and species. They are listed in tables 1 and 2.

1. Floristic Characterizations of Euphorbiaceae studied

Table 1. Ecological characteristics and vernacular name of Euphorbiaceae studied

Plants and species	Vernacular Name	Morphological type	Biological type	Habitat type
<i>Acalypha cupricola</i> Robyns ex. G.A Levin	Kabamba Sheshe (Bemba)	Her	Ch	Fcl and Sav
<i>Acalypha homblei</i> De Wild.	Lwenyi (Luba, Bemba) Kaboko Pabalwany (Luba)	Shr	NnPh	Fcl
<i>Acalypha paniculata</i> Miq.	Kabobo or Kaboko (Bemba) ; Mutondal (Lunda) ; Kalungupa (Kahonde)	Shr	NnPh	Fcl
<i>Acalypha senensis</i> Klotzch	Kaboko or Lweni (Bemba)	Shr	NnPh	Fcl and Rud
<i>Antidesma meiocarpum</i> J.Léonard.	Mulambabwato (Bemba)	Tr	MsPh	Fog
<i>Antidesma membranaceum</i> Müll. Arg.	Tshilumba Mutshi (Tshiluba)	Tr	MsPh	Fog et Sav
<i>Antidesma venosum</i> E. Mey. ex Tul.	Itompo or Chibenda (Bemba), Itompo (Lala), Musambafwa (Bemba, Luba), Misengo (Kikongo), Kifubia (Hemba), Kafubia (Tshiluba), Kakula (Kanioka).	Tr	MsPh	Fcl
<i>Antidesma vogelianum</i> Müll. Arg.	Mutanta Nsenge (Bemba)	Trm	McPh	Fcl
<i>Bridelia atroviridis</i> Müll. Arg.	Kankuku (Luba); Kilembalemba (Kaonde), Mukulakushwa, Mukulukushwa (Luba Lolo, Tabwa).	Trm	McPh	Fcl
<i>Bridelia cathartica</i> G.Bertol.	Mukuntampele, Munwemeshi (Bemba)	Trm	McPh	Fcl
<i>Bridelia duvigneaudii</i> J. Léonard.	Kalambabwato (Bemba).	Trm	McPh	Fcl and Sav
<i>Bridelia ferruginea</i> Benth.	Musangula (Bemba)	Trm	McPh	Fog

<i>Bridelia micrantha</i> (Hochst.) Baill.	Mumwenameshi, Ndyabetene (Bemba) ; Kinzindu (Kikongo) ; Musanga (Tshiluba)	Trm	McPh	Fog
<i>Bridelia scleroneura</i> Müll. Arg.	Mumwenameshi (Bemba).	Trm	McPh	Fog
<i>Cleistanthus milleri</i> (Dunkley) Radcl.-Sm.	Mukonde (Bemba), Kampangala (Bemba, Luba).	Tr	MsPh	Fog
<i>Croton gratissimus</i> Burch.	Kavudji (Tshiluba)	Trm	McPh	Rud
<i>Croton macrostachyus</i> Hochst.	Mutara Mutshi (Bemba)	Trm	McPh	Fog
<i>Croton mubango</i> Müll. Arg.	Kabujimutshi (Tshiluba), Mulemba (Songye)	Trm	McPh	Cult
<i>Erythrococca fischeri</i> Pax.	Mulia (Bemba)	Shr	NnPh	Fog
<i>Euphorbia heterophylla</i> L.	Katonvitonvi (Lamba)	Shr	NnPh	Fal and Rud
<i>Euphorbia hirta</i> L.	Maziba Ya Kalulu (Swahili), Butonvitonvi (Bemba, Tshiluba), Kake (Tshokwe), Buyonzi (Kibangubangu), Kavudji (Luba)	Her	Th	Fal and Rud
<i>Euphorbia hypericifolia</i> L.	Hivumba (Hemba), Kihimnene (Lamba, Lala)	Her	Th	Fal and Rud
<i>Euphorbia inaequilatera</i> Sond.	Kalong (Rund)	Her	Ch	Fal and Rud
<i>Euphorbia ingens</i> E.Mey.	Kitupa, Kibeka (Bemba),	Trm	McPh	Sav and Tar
<i>Euphorbia prostrata</i> Aiton.	Kapala Tonvitonvi (Bemba).	Her	Th	Rud
<i>Euphorbia tirucalli</i> L.	Lusonga (Sanga), Ntulu (Luba), Potenge (Swahili).	Trm	McPh	Rud
<i>Jatropha curcas</i> L.	Chitondomona Ou Chitondoma, Kitondomono (Bemba), Mupulunga (Kikongo), Mbono (Swahili), Ntondondimba (Bemba), Kilembelembe (Luba), Tshikusukusu, Nkambua, Mvidie, Kapuluayi (Tshiluba), Kabuwabuwa (Songye)	Trm	McPh	Cult and Orn
<i>Jatropha gossypifolia</i> L. var. <i>elegans</i> (Pohl.) Müll. Arg.	Kilembelembe (Hemba)	Shr	NnPh	Cult and Orn
<i>Macaranga schweinfurthii</i> Pax.	Munkala (Luba), Kilongalong (Lunda)	Tr	MsPh	Fog
<i>Manihot esculenta</i> Crantz.	Sombe ya Pori (Swahili)	Trm	McPh	Cult
<i>Manihot utilisima</i> Pohl.	Sombe (Swahili)	Tr	MsPh	Cult
<i>Maprounea africana</i> Müll. Arg.	Kafulumume, Mupasa or Mutumbwa (Bemba), Kafungunasha (Bemba); Kazembezembe (Luba), Kafulama (Tshiluba), Katembo (Tetela); Ikenke, Shenkuke (Tshiluba), Kafula Ndime (Luba)	Tr	MsPh	Sav
<i>Oldifielda dactylophylla</i> (Well. ex Oliv.) J. Léonard.	Muonga (Luba Et Swahili), Muhonga (Hemba), Kampangwila (Bemba); Kamondo (Bemba).	Tr	MsPh	Sav
<i>Phyllanthus amarus</i> Schumacher & Thonn.	Kavudi (Luba), Kivumbwa (Hemba)	Her	Th	Rud
<i>Phyllanthus guineensis</i> Pax in Schinz. Bull. Herb. Boiss	Luheya Mafumu (Luba), Mulembalemba (Swahili), Mupetwalupe or Unono (Bemba), Muketwalupe (Luba), Kariuver (Lunda)	Trm	McPh	Tar
<i>Phyllanthus microdendron</i> Welw. ex Müll. Arg.	Mupetwalupe or Unono (Bemba)	Trm	McPh	Fcl
<i>Phyllanthus muellerianus</i> (Kuntze) Exell.	Musambafwa or Mupetwalupe (Bemba), Luhanga, Lulembalemba (Luba), Luganga Nyimbwa, Luhega Mafumu (Hemba), Munsangalanga, Luanga Ndindi (Tshiluba) ; Mulembalemba (Hemba, Sanga, Kaonde), Mupetwa Lupe (Bemba)	Tr	MsPh	Fcl and Rud
<i>Phyllanthus niruri</i> L.	Kahungahunga (Tshiluba), Kapondo (Songye).	Her	Th	Rud
<i>Phyllanthus parvulus</i> Sond.	Mwikala Nsenga (Luba), Mushindanga (Bemba)	Shr	NnPh	Fcl
<i>Pseudolachnostylis maprouneifolia</i> Pax.	Muselie, Musangali, Musalya (Bemba), Mbulu (Luba), Musala, Musaria (Tshokwe), Kizembe (Tshiluba), Kizengwe, Mbumbu (Luba), Musangati (Swahili), Musangali (Bemba)	Tr	MsPh	Fcl

<i>Ricinodendron africanum</i> Mull.Arg.	Mukusu, Musozi Kota (Bemba, Lala, Lamba)	Tr	MsPh	Fog
<i>Ricinus communis</i> L.	Mbarika (Swahili), Lumono (Lunda), Lundondo (Hemba), Mono, Mubalika (Bemba), Munono, Kaselesele (Bemba, Luba), Tondowa, Kayamba, Bitondotondo, Lutondotondo (Luba), Kinonomono, Kimono, Munono (Sanga), Mudia Tondo Impanga (Tshiluba)	Trm	McPh	Cult and Rud
<i>Sapium cornotum</i> Pax.	Tshibenga Ngenga (Tshiluba); Kititi, Ntiti, Titi, Titi Bwela (Kikongo), Okangakanga (Tetela)	Tr	MsPh	Fcl
<i>Sapium ellipticum</i> (Hochst.) Pax.	Mutantansenge, Mukondokondo (Bemba), Mpuluka (Kikongo).	Tr	MsPh	Fog
<i>Sapium schmitzii</i> J. Léonard.	Muntunta (Sanga, Bemba), Musandagangala (Tshiluba)	Tr	MsPh	Tar
<i>Securinega virosa</i> (Roxb. ex Willd.) Baill.	Kasansubwanga (Bemba), Luzwela (Lunda).	Trm	McPh	Sav
<i>Tragia brevipes</i> Pax.	Bupupu (Tabwa), Chavi (Swahili), Lusungisungi (Luba)	Her	Ch	Fcl
<i>Uapaca benguellensis</i> Müll. Arg.	Mupangwa, Mukonko, Tupamba (Bemba), Mukwale (Lunda); Malobe (Luba)	Tr	MsPh	Fcl
<i>Uapaca guineensis</i> Müll. Arg.	Masuku (Bemba), Malobe (Luba); Musela (Rega), Bosenge (Lingala), Kidianga, Msafi (Kigongo, Kiyombe)	Tr	MsPh	Fcl
<i>Uapaca kirkiana</i> Müll. Arg.	Masuku (Bemba, Swahili)	Tr	MsPh	Fcl
<i>Uapaca nitida</i> Müll. Arg.	Musonkolobe (Bemba).	Tr	MsPh	Fcl
<i>Uapaca pilosa</i> Hutch.	Mupangwa, Mukokolo, Mukelolo, Kakomekime (Bemba)	Tr	MsPh	Sav
<i>Uapaca sansibarica</i> Pax.	Mutankola, Musonkolobe, Kapombwe (Bemba).	Tr	MsPh	Fcl

All species in table 1 above are known in the vernacular name because they are either used by traditional healers in the traditional treatment or their fruits, leaves and roots are consumed or used by local people. In relation to their frequency, languages used to identify plant species are Bemba (46 times used), Luba (24) Chiluba (15), Swahili (11) Hemba (8) Kigongo (6), Lunda (6), Sanga (4), Songye (3), Lala (3), Lamba (3), Kaonde (2), Tabwa (2), Tetela (2), Chokwe (2), Kahonde (1) Kanioka (1) Kibangubangu (1) Kiyombe (1), Lingala (1) Rega (1) and Rund (1).

2. Morphological type

Figure 2 below shows the different morphological types identified for Euphorbiaceae used in the treatment of various diseases in the city of Lubumbashi and its surroundings.

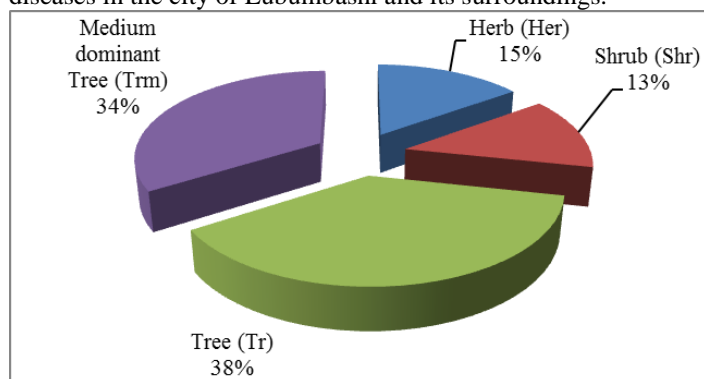


Figure 2. Weighted morphological type identified
From figure 2, it can be noticed that trees (10-30m length) represent the most abundant morphological type with 38% of species surveyed shrubs represent the less abundant morphological type (13%).

3. Biological Type

Biological types are represented in figure 3

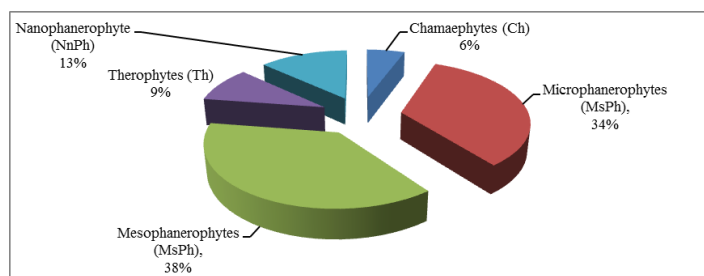
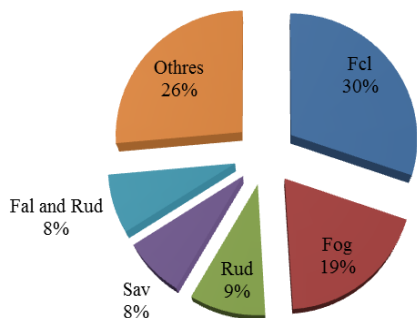


Figure 3. Weighted biological type

4. Habitat preferences

The habitat preference, are shown in Figure 4 below

Figure 4 shows that 30% Euphorbiaceae inventoried grow in the clear forest (Miombo). It is a kind of vegetation that is found abundantly in the southern part of the DRC [20-22]. It is followed by the gallery forest that represents 19% of species. However, other biotopes are represented by less than 10% of species. They are savanna, ruderal, cultivated land, ornamental, fallow and termite.



5. Ethnobotanical knowledge of studied Euphorbiaceae plants species

Medicinal usages of Euphorbiaceae plant species inventoried during the various surveys are summarized in table 2 below. This table gives the scientific name for each species, the part used in traditional medicine, the pathology treated and/or indication as well as the preparation method of drugs and their mode of administration.

Table 2. Ethnobotanical knowledge of some Euphorbiaceae plants species

Scientific name	PU	Pathologies or indication	Preparation and administration route of drugs
<i>Acalypha cupricola</i> Robyns	R	Diarrhoea, abdominal pain.	Decoction, drink (3 glasses per day)
		Cough	Smoke leaves several times daily.
	Le	Wounds.	Powder, local application.
<i>Acalypha homblei</i> De Wild.	Bs, Le	Diarrhoea, Gonorrhoea	Decoction; drink (2 glasses per day)
	Le	Wounds	Powder, local application.
<i>Acalypha paniculata</i> Miq.	Br	Diarrhoea; gonorrhoea, abdominal pain, loss of appetite.	Decoction, drink (3 glasses per day)
	Bs	Diarrhoea and mouth sores	Decoction, drink (1 glass 2-3 times per day)
<i>Acalypha senensis</i> Klotzch	Bs	Gonorrhoea, abdominal pain, umbilical hernia, and loss of appetite	Decoction, drink
<i>Antidesma meicarpum</i> J.Léonard.	Br	Asthma, hernia, Diarrhoea, diabetes.	Decoction, drink (1/2 glass per day)
<i>Antidesma membranaceum</i> Müll. Arg.	Le, Bs, Br	Asthma, hernia, Diarrhoea, diabetes.	Decoction, drink (1/2 glass per day)
<i>Antidesma venosum</i> E. Mey. ex Tull.	Bs, Br	Diarrhoea diverse, gonorrhoea, abdominal pain, syphilis, female infertility and dysmenorrhoea, aphrodisiac and intestinal worms.	Decoction, drink (1/2 – 3 glasses per day)
		Abscess	Application of the sap on the abscess
	Bs or Le	Snake bite	Decoction, drink: 1glass more than 3 times/day
		Threatened abortion	Powder; vaginal suppository 1x/day for 1 week
	R or Le	Tooth decay	Decoction; Gargling (1glass, 3 times/day)
		Gonorrhoea	Decoction; drink
	Bs or R	Diabetes, gastritis, gonorrhoea	Decoction; drink
	Bs	Snake bite	Powder; local application
<i>Antidesma vogelianum</i> Müll. Arg.	Le	Diarrhoea , malaria	Decoction: drink ½ glass 2 times/day
	Bs or Br	Various Diarrhoea, gonorrhoea, abdominal pain, gonorrhoea, syphilis, female infertility, dysmenorrhoea, aphrodisiac and intestinal worms.	Decoction, drink (1/2 – 3 glasses per day)
<i>Bridelia atroviridis</i> Müll.Arg.	Bs,Br, R	Diarrhoea	Decoction, drink (1 glass, 3x/day)
		Haemorrhoids.	Powder, local application.
		Fresh wounds.	Decoction of fresh organs, wound cleaning and powder, local application.
		Women Abdominal pain, dysmenorrhoea and headache.	Decoction, drink (1 glass, 3x/day)
		Epigastric pain.	Powder, triturated with oil or butter; consumption.
		Eye ailments.	Decoction, 1-5 drops/day in eyes.
		Purgative and antitussive	Infused + sugar; drink. (1 glass, 1x/day)
	Bs	Amoebiasis, bloating belly	Decoction, drink (1 glass, 3x/day)
<i>Bridelia cathartica</i> G.Bertol.	Br, Le	Abdominal pain, painful menstruation, gonorrhoea, syphilis	Decoction, drink (1 glass, 3x/day)
<i>Bridelia duvigneaudii</i> J. Léonard.	Bs, Br or R	Diarrhoea	Decoction, drink (1 glass, 3x/day)
		Haemorrhoids.	Powder, local application.
		Injuries (fresh wounds).	Decoction of fresh bodies, cleaning the wound.
		Women abdominal pain and	Decoction, drink (1 glass, 3x/day)

		dysmenorrhoea, headache, gonorrhoea	
		Epigastric pain.	Powder triturated with oil; consumption.
		Eye ailments.	Decoction, 1- 5 drops/day in the eye.
	R or Le	Tooth decay	Decoction, Gargling; Powder, introducing the powder into the tooth
<i>Bridelia ferruginea</i> Benth.	R	Gonorrhoea, constipation.	Powder, Eating (30 g of powder mixed with food).
		Dystocia, convulsions, Diarrhoea , intestinal worms, amoebas	Decoction of 20 g of root in 1 litre of water, drink (1glass 2x/day).
<i>Bridelia micrantha</i> (Hochst.) Baill.	Le	Cough and Diarrhoea	Decoction; beverage
	Bs	Anaemia, dysentery	Juice; beverage
		Wounds and haemorrhoids	Infusion, drink
	R	Abdominal pain, women pain and constipation	Infusion, drink
	Le	Gastric ulcer	Powder, swallow.
		Headache	Ointment (f + ointment), local application.
		Conjunctivitis	Decoction; drops in eye.
		Fresh wounds	Decoction of fresh leaves, washing the wound.
		Gencivite, wounds on lips.	Powder, local application.
		Fever, headache.	Decoction or infusion, steam bath.
	Vaginal hypersecretion	Powder in cloth, insert into the vagina.	
	Bs, Le	Anaemia, headache, Diarrhoea , abdominal pain, gastric ulcer, haemorrhoids, cough	Decoction or infusion; drink (1-2glasses,3x/day)
<i>Bridelia scleroneura</i> Müll. Arg.	Bs	Abdominal pain, indigestion	Decoction, enema or drink
<i>Cleistanthus milleri</i> (Dunkley) Radcl.-Sm.	Le or Bs	Cancer (kipwalonda)	Dry and grind; local application or local application fresh crushed organ;
		Persistent wounds	Maceration, washing wounds before applying the powder.
	Bs or Br	Abdominal pain	Decoction, drink (1/2glasses, 3x/day)
		Chronic gonorrhoea, gonorrhoea.	Decoction, drink (1/2glasses, 3x/day)
	Se	Constipation	Eating with peanuts to cause Diarrhoea.
		Its consumption may cause abortion	
<i>Croton gratissimus</i> Burch.	Se	Dental caries	Decoction; mouth steam bath
<i>Croton macrostachyus</i> Hochst.	Le	Diabetes, gonorrhoea, dysmenorrhea	Decoction; enema
<i>Croton mubango</i> Müll. Arg.	Le	Asthma, convulsion.	Fumigation every day until recovery
		Hernia, asthma, diarrhoea	Decoction, drink 1 glass a day.
	St	Diarrhoea,	Pounding, drink (1 spoon, 2x/day and insert into the anus
	R	Hernia, fever, aching, headache, cough.	Decoction, drink, 3 glasses/day
	Fr	Stimulating	Mix 10 g of powder with food and eat
<i>Erythrococca fischeri</i> Pax.	Bs	Syphilis, abdominal pain, diarrhoea and intestinal worms	Decoction, drink
<i>Euphorbia heterophylla</i> L.	Wp	Amoebic dysentery, gonorrhoea	Decoction, drink (½ glass) morning and evening
		Persistent local wounds and cancer.	Powder, local application in the form of dough
		Eye sores.	Decoction or macerated, eye drops
<i>Euphorbia hirta</i> L.	Wp	Diarrhoea , pinworms, antipyretic, anti-asthma, chronic bronchitis, gonorrhoea, galactogenic, snake bite; Bronchitis, asthma, dysentery	Decoction, drink
		Tooth decay.	Infusion drink
		Conjunctivitis and cataracts	Decoction, suction mouth open, oral Steam bath
		Cough, purgatives	Decoction, Drop into the eyes
		Lactation	Decoction, Drink
		Amoebas	Cooked leaves + peanuts; eat
		Amoebic dysentery.	Decoction of <i>E. hirta</i> (Le) + <i>Carica papaya</i> (R) drink or Decoction of <i>E. hirta</i> (Le) + <i>Mangifera indica</i> (R), drink
		Rebel wounds, skin diseases;	Powder of fresh plant, local application;
Insecticide (bedbugs, lice, ticks).	Maceration; sprinkle.		

		Cataract.	Latex; application in the eye.
		Intestinal worms.	Chewing the leaves (a handful of Wp per day) with peanuts
		Tooth decay.	Decoction, gargling.
		Delayed development of the child, abdominal pain.	Decoction, enema (1x / day).
		Aphrodisiac, cough, anthelmintic, anti-Diarrhoea , dysentery, diuretic;	Chew the aerial parts and swallow the juice
		Abortive	Decoction, drink;
<i>Euphorbia hypericifolia</i> L.	Wp or Le	Gonorrhoea	Decoction, drink
		Wounds	Grinding of fresh leaves, local application
		Headache, Diarrhoea , dysentery	Decoction; drink (1glass, 3 thrice a day)

<i>Euphorbia inaequilatera</i> Sond.	Wp	Amoebic dysentery.	Chewing the leaves (a handful/day) with peanuts
		Wounds.	Maceration, cleaning wounds before applying the powder; Drying and grinding, local powder application or local application of fresh organ ground.
		Insecticide (bedbugs, lice, ticks).	Maceration; sprinkle.
		Cataract.	Latex; application in the eye.
		Intestinal worms.	Chewing the leaves (a handful per day) with peanuts
		Tooth decay.	Decoction, oral steam bath.
		Delayed development of the child, abdominal pain.	Decoction, enema 100ml, 1x / day.
<i>Euphorbia ingens</i> E.Mey.	Sap	Constipation and cancer	Decoction, Drink
		Dermatosis	Local application
<i>Euphorbia prostrata</i> Aiton.	Wp	Gonorrhoea, syphilis and hypertension	Decoction; drink
		Dysentery	Decoction, drink (1-3 glasses/day).
		Eye disease;	Decoction, 1-4 drops several times a day.
		Fractures and sprains	Grinding fresh organ, cataplasm.
		Diabetes	Decoction, drink, (1-2 glasses/day).
		Sore throat and oral cavity, dysentery, diabetes	Decoction, drink: (1 glasses, 2x/day); Gargling 2 times/day
	Sap	Snakebites	Application of latex on the bite
<i>Euphorbia tirucalli</i> L.	Bs	Sexual asthenia, emetic and syphilis	Decoction, drink
		R	Snake bite
		Diarrhoea , abdominal pain, syphilis, gonorrhoea, sexual asthenia	Infusion, drink: (1 glass more than 3 time/day)
<i>Jatropha curcas</i> L.	Le	Malaria, hypertension, jaundice, headaches, diabetes, dysentery, stomach pains, vomiting, hiccups;	Decoction, drink.
		Oedema, sickle cell anaemia, cough, convulsion, ringworm; Pruritus, gout, paralysis, wounds and STDs	Decoction; Drink or external use
		Ear infections;	Juice; instillation
		Pain and rheumatism;	Friction
		Neuralgia, wounds, ulcers;	Leaves softened in the fire; local application
		Clearance kidney	Decoction; drink
		Enteralgy, purgative;	Decoction + Soft drink; drink
		Gonorrhoea;	Decoction; enema
		Goitre	Slightly heat the fresh leaves; Massaging goitre with hot leaves every day until the disappearance thereof.
		Jaundice, parasitic, gales	Decoction; drink or washing the body
		Tooth decay	Gring 1-2 leaves + stem + salt; application on the pellet cracked tooth;
		Malaria, jaundice, vomiting	Decoction drink (1 glass, 2 times/day)
		Bs	Haemostatic, circumcision wound, fresh wounds, gingivitis in children.
		Le, Bs, R	Drastic purgatives, gonorrhoea;
	Diarrhoea various		

	Se.	Schistosomiasis, gonorrhoea,	Decoction, drink (1 glass 3 times/day).
	St	Tooth decay, mumps and ear infections.	Crushed fresh leaves, local application or young stem as toothbrush.
		Wounds.	Local application of the powder or sap
	Le, R	Stomach ache.	Decoction (associated with lemon leaves), drink 3x / day.
	Sap	Mycosis.	Scratching, applying the sap.
	R	Bleeding and Wounds	Local application
	Gastritis	Decoction of Root + <i>Kigelia aethiopica</i> (Root) + <i>Psorospermum febrifugum</i> (Root) + <i>Antidesma venosum</i> (Root) + sugar (1 glass) drink + eggplant; drink	
<i>Jatropha gossypifolia</i> L.	Br	Gonorrhoea and threatened abortion	Decoction; drink
<i>Macaranga schweinfurthii</i>	Bs, Br	Schistosomiasis.	Powder + palm oil; local application
		Gonorrhoea, Diarrhoea and infections	Infusion, drink
<i>Manihot utilissima</i> Pohl	R	Cancer	decoction; drink
		Sore throat, ascites, lice and eczema	Juice, drink or local application
<i>Manihot esculenta</i> Crantz.	Le	Ulcers, abscesses caused by chiggers	Crushed leaves; cataplasm
		Headaches, sore eyes	Decoction; Wash the affected part
		Chickenpox, Skin diseases	Milling; friction of the dough leaves
		Ophthalmia	Juice; eye drops
		Wired	Juice; local application.
		Conjunctivitis	Juice; Ocular instillation
	R	Stop the bleeding after childbirth.	Maceration of the tubercle without bark, sits bath
		Galactogenic	Maceration of the tubercle without bark residue; drink
		Wounds	Rasping of the tubercle without bark, local application
	Br	Minor burns	Rasping fresh roots, local application
	Wp	Ulcers	Maceration of tubercles, wash the affected part
	St, Le	Pinworm	Rasping; cataplasm
		Cancer	Decoction, drink or Ash + native salt; suppository
		Emetic, snake bite, poison Antidote, male sterility, dysentery, metrorrhagia	Maceration in fermented corn wort ; drink

<i>Maprounea africana</i> Müll.Arg.	Bs	Toothache	Decoction ; gargling
	Br or R	Decreased urine output, constipation, eye problems, abdominal pain, gonorrhoea, syphilis, tooth decay, schistosomiasis and intestinal worms	Decoction ; drink
		Purgative, blurred vision	Decoction ; drink
		Diabetes	Decoction ; drink
		Dysmenorrhea	Decoction; drink (1glass 3x/day) during 5 days.
	Sap	Wound of circumcision	Sap immature fruit; local application
	Fr	Constipation, gonorrhoea, intestinal worms	Decoction ; drink (2 glasses/day)
<i>Oldifielda dactylophylla</i> (Well. ex.Oliv.) J. Léonard	Le, Bs	Gonorrhoea and AIDS	Decoction; drink and enema
		Intestinal worms	Decoction; drink
	Bs, Br	Malaria	Decoction; oral steam bath.
		Painful menstruation	Decoction; enema
<i>Phyllanthus amarus</i> Schumach. & Thonn.	Wp	Dysentery, Gonorrhoea, Gastritis	Decoction or maceration: drink
<i>Phyllanthus guineensis</i> Pax in Schinz. Bull.Herb. Boiss	Br, Bs, Le	Diarrhoea.	Decoction, drink (1glass, 3x/day).
		Wounds.	Dry and grind; Local application of the powder
	Burns.	Maceration, cleaning wounds.	
		Tooth decay.	Crushed fresh leaves, Local application on the tooth;
	R	Stomach pain and painful menstruation.	Steam baths; chew the fresh roots with salt, peanuts, toasted manioc or corn
	Cough with vomiting (paediatric cases), STIs, female infertility hypertension and	Decoction, drink	

		snake bites.	
	Le	Facilitate childbirth.	Decoction, drink (1 glass, 2-3x/day for adult, ½ glass, 2- 3/day for child.
	Fr	Vomiting, sexual asthenia, gonorrhoea, oligospermia, infertility and dysmenorrhoea, headache and dizziness.	Decoction, drink or Maceration, sits bath Decoction, drink, (3 glasses/day or several times a day if serious condition.
<i>Phyllanthus microdendron</i> Welw. ex Müll. Arg.	Bs	Diarrhoea	Decoction, drink, (3 glasses/day).
		Closing cervix after an abortion;	Powder in a fabric, introduction into the vagina.
		Indigestion and constipation.	Decoction or infusion, drink (3 glasses)
		Cough and chest pain	Decoction, drink (1-3 glasses/day).
	Le	Toothache.	Decoction, mouthwash.
<i>Phyllanthus muellerianus</i> (Kuntze) Exell.	Br, Bs, Le, Fr	Diarrhoea.	Decoction, drink (1 glass, 3x/day)
		Wounds.	Dry and grind; Local application of the powder.
		Burns.	Macerated solutions, cleaning wounds. Local application of crushed fresh body; + ash powders turtle bone or tibia, local application not renewing, healing the crust falls of itself; (Single treatment).
		Nausea, dizziness in pregnant women.	Steam baths.
	R	Aphrodisiac.	Chewing the fresh roots with salt, peanuts, cassava and roasted corn.
		External haemorrhoid	Decoction of R; enema; Bark stems ash + palm oil, suppository
	R, Le	Tooth decay.	Decoction, gargling for 10-20 min.
		Stomach pain and painful menstruation.	Decoction, drink 2 to 3 x (1 glass, 2-3 times/day for adult, ½ glass, 2-3 times/day for child).
	Le	Cough with vomiting (paediatric cases), STD, female infertility, hypertension and snake bites.	Maceration of fresh leaves, sits bath.
		Vomiting, sexual asthenia, gonorrhoea, oligospermia, infertility and dysmenorrhoea, headache and dizziness.	Decoction, drink, 3 glasses/day or several times a day if serious condition.
		Anaemia	Decoction and saturated sugar; drink (1 spoon, 2x/day for children and 1 cup, 2x/day for adults.
		Infantile convulsion	Grinding of leaves + <i>Ocimum americanum</i> leaves; Application on child's body (2 times/day) for 4 days.
	Le, R	Diabetes	Decoction leaves + <i>Ocimum americanum</i> (Roots); Enema (1x/2 days) for 2 weeks
	R or Bs	Malaria, hypertension, constipation.	Maceration, drink, (1 glass, 2x/day)
	Le, Bs, R	Haemorrhoid.	Pounding, sits bath or local application (2x/day)
	St, R	Diarrhoea, cholera.	Decoction, drink (1 glass, 3x/day)
	Slump, Ascariasis.	Brewing, drink (3 glasses/day)	
	Measles, dysmenorrhoea	Maceration, drink, (2 glasses/day)	
<i>Phyllanthus niruri</i> L.	Wp	Diarrhoea, stomach pain, constipation, lumbar pain.	Decoction, drink (1 glass/day)
		Helminth infections, diarrhoea, gonorrhoea.	Decoction (30g of leaves), drink, ½ glass 3x daily.
		Diarrhoea, hernia, gonorrhoea, asthma, fever, diabetes.	Decoction or maceration, drink (1 glass/day)
<i>Phyllanthus parvulus</i> Sond.	Br,	Cough	Decoction ; drink
	Bs, Le	Tooth decay	Decoction ; gargling

<i>Pseudolachnostylis maprouneifolia</i> Pax.	Bs, Br, Le	Diarrhoea, gastritis, amenorrhoea, dysmenorrhoea, Sexual asthenia;	Decoction, drink (3 glasses/day)
	Bs or R	Persistence wounds	Powder + palm oil, local application.
			Grinding of R + Cassava tubercle; local application
	R	Various diarrhoea, abdominal pain, gonorrhoea, dysmenorrhoea, gastritis, pneumonia,	Decoction, drink (1 glass, 3x/day)
		Tooth decay.	Decoction or macerated gargling (Several times per day).
		Prevention of tetanus	Decoction, drink (1 glass/day)

	St	Toilet teeth,	Use as a toothbrush.
		Diabetes, gastritis, digestive disorders, cough, Diarrhoea, dysmenorrhoea	Decoction; drink ; chew of leaves of roots
	Le, R	Infertility	Maceration; Drink (2-3 glasses/day) until the conception or birth of the child.
	Le	Fever	decoction; drink and bath
		Fungal infections, furuncle, buboes, abscesses	Grind Leaves or Bark stem; local application
	Br or R	Wired, ophthalmia	Juices, Instillation into the eyes
		Cough, gonorrhoea, painful periods, antidote poisons, Colic, dysentery powerful, gastric disorders	Decoction or infusion; drink
		Snake bite	Decoction; drink; snake head + bark root or root ashes; Application on tattoos done around the bitten area
<i>Ricinus communis</i> L.	Le, R	Diarrhoea of children called "Lukungu".	Ash mixed with oil, apply to the mouth palate, on the head, neck and anus.
	Le	Various wounds	Ground (fresh Leaves), local application of dough
	St, Le	Swollen testicles, gonorrhoea and syphilis.	Decoction, drink (3 glasses/day).
		Diarrhoea called "Kasumbi"	Ash + palm oil, applied to the anus
	Le	Strengthen the child to walk and his health.	Infusion, washing and massage at joints.
		Dental caries with swollen gums	Decoction; gargling
		Facilitate childbirth, to help primiparous to give birth without pain.	Decoction, steam bath in the vagina (1x/day at evening).
		Fall of the matrix	Milling; Introduce as a suppository into the vagina (Twice a day).
		Open collar during pregnancy	Milling; Applying the dough to both sides of the labia majora 1x /d.
		Se Oil	Hair straightener.
		Magical practice.	Coat the amulets for protection and luck, wear.
		Laxatives.	Shell the seeds and eat them with peanuts.
<i>Sapium cornotum</i> Pax.	Le	Diarrhoea, headache, snakebite, fever, rheumatism	Decoction, drink (1 glass, 2x/day)
<i>Sapium ellipticum</i> (Hochst.) Pax.	Le	Wounds, sore eyes and various pains	Maceration; wound cleansing or body wash
	St	Stomach ache	Decoction; drink
<i>Sapium schmitzii</i> J. Léonard.	Br	Gonorrhoea	Maceration; drink
	Bs, Br	Abdominal pain, diarrhoea, painful menstruation	Decoction; drink
<i>Securinega virosa</i> (Roxb. ex Willd.) Baill.	Le	Pinworm infection and dizziness due to pregnancy	Maceration; drink
	Br	Obstructed childbirth, syphilis and gonorrhoea	Decoction; drink
<i>Tragia brevipes</i> Pax.	Le	Reduce pain during childbirth, gonorrhoea, diarrhoea and stomach pain	Decoction; drink
		Rheumatism	Crush fresh leaves; rubbing feet
<i>Uapaca benguellensis</i> Müll. Arg.	Bs, Br	Abdominal pain and Diarrhoea	Decoction; drink (1 glass, 3 times a day)
<i>Uapaca guineensis</i> Müll. Arg.	Bs	Skin disease	Lotion (Grind Bs + palm oil); application to the skin
	Br	Aphrodisiac	Decoction; drink
	Le	Endometritis	Decoction; drink and/or enema
<i>Uapaca kirkiana</i> Müll. Arg.	Le, Bs or Br	Diarrhoea and dysentery, amoebiasis	Decoction, drink (1 glass 3x/day or 1 glass/4h in case of severe diarrhoea or dysentery; chew young leaves and swallow the juice, repeated several times a day.
	Bs	Various persistent wounds	Powder of fresh crushed Bs; local application
		Tooth decay.	Decoction or maceration, gargling (Several times a day).
		Internal haemorrhoid, abdominal pain, gonorrhoea, itching and aphrodisiac.	Decoction, drink (2-3 glasses a day) and/or enema
		Diabetes, diarrhoea, infertility, headaches	Decoction; drink
<i>Uapaca nitida</i> Müll.	Le, Bs	Diarrhoea and dysentery.	Decoction, drink (1 glass 3x/day or 1 glass/4h in case

Arg.	or Br		of severe diarrhoea or dysentery; chew young leaves and swallow the juice, repeated several times a day.
		Various persistent wounds.	Powder; local application
	Bs	Tooth decay.	Powder of fresh crushed Bs; local application
<i>Uapaca pilosa</i> Hutch.		Internal haemorrhoid, abdominal pain, gonorrhoea, itching and aphrodisiac.	Decoction, drink (2-3 glasses a day)
	Bs, R, Young Le	Diarrhoea	Decoction or maceration, drink (3-4 glasses/day)
		Gonorrhoea, syphilis and hernias, vaginal pruritus, breast wounds	Decoction, drink (1 glass/day); macerated, sits bath or swab the body or sprinkle the sick places.
		Diarrhoea, constipation and abdominal pain	Decoction, drink (1 glass, 2 times/day)
<i>Uapaca sansibarica</i> Pax.	Bs	Various and persistent wounds	Powder, local application
		Traumatism	crushed fresh organs, local application

It emerges from the table 2 above that 53 Euphorbiaceae used in traditional medicine in Lubumbashi and its surroundings are indicated in the treatment of several diseases or symptoms.

Used Organs

The Plant organs used in the preparation of drug recipes are grouped according to their frequency of use in table 3 and the figure 4 below.

Table 3. Organs used for the preparation of drug recipes

Part used	Frequency	%
Bark root and/or Root	56	32.75
Bark stem and/or Stem	49	28.65
Leaves	45	26.32
Whole plant	8	4.68
Fruit	5	2.92
Sap	4	2.34
Seed	4	2.34

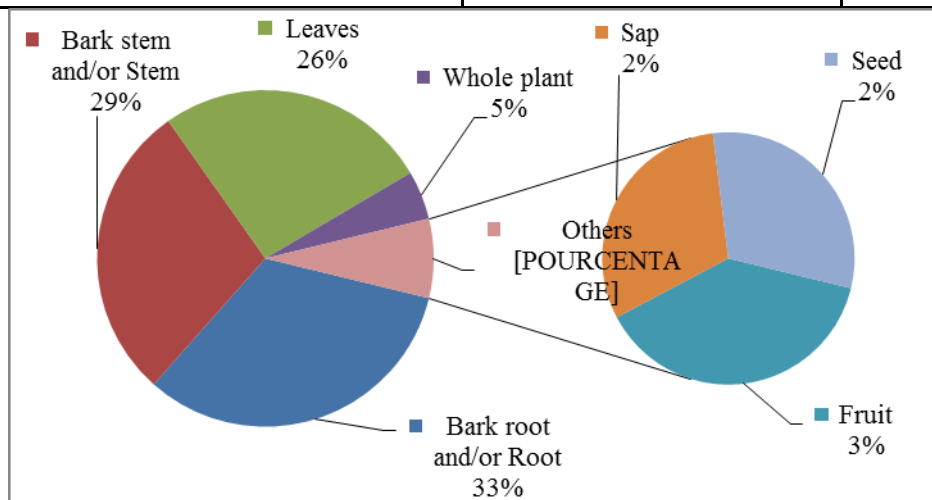


Figure 4. Frequency of plant organ use

The most used organs in the preparation of drug recipes are the roots or their bark (32.75%), followed by stems or their bark (28.65%) and leaves (26.32%). In fact, leaves, roots, stems or their bark are usually the most used organs of plant species by traditional healers [7]. This could be because they are the plant organs that are available during all seasons throughout the year. However, in some drugs, the whole plant is also used for the

preparation. These species are often grass or shrubs morphological types. The use of the sap, fruit and seeds can also be noticed in the preparation of traditional drugs.

Preparation mode of drug recipes

Different modes of preparation of drug recipes are given in table 4.

Table 4. Different modes of preparation of drug recipes

Preparation mode	Frequency	%
Decoction	139	58.40
Maceration	25	10.50
Powder of organ	18	7.56
Grinding	15	6.30

Infusion	12	5.04
Latex or sap	7	2.94
Ash	4	1.68
Leaves (crushed, cooked or softened to the fire)	5	2.10
Roots	2	0.84
Oil	1	0.42
Organ juices	1	0.42
Mix the powder with food organs	1	0.42
Mash	1	0.42
Grated	1	0.42

From this table, it appears that the decoction (139 case out of 232 total: 58.40%) is the most widely used method for the preparation of traditional drug recipes. It is followed by maceration (10.50%), the organ powder (7.56%), the grinding (6.30%) and the infusion (5.04%). Other drugs preparation modes are rarely used.

Administration route of drug recipes

The table 5 gives different routes of recipes administration.

Table 5. Different administration routes

Administration modes	Frequency	%
Drink	122	43.57
Local application	54	19.29
Bath (body, mouth, seat and steam)	13	4.64
Application in the eye (eye drops, drips and draining, instillation)	11	3.93
Clean or wash	11	3.93
Enema	11	3.93
Gargle	10	3.57
Chewing or mastication	9	3.21
Suppository	6	2.14
Eat	4	1.43
Toothbrush.	3	1.07
Swallow the juice	3	1.07
Poultice	3	1.07
Friction	3	1.07
Sprinkle	2	0.71
Consume	2	0.71
Inhalation	2	0.71
Suction mouth open,	1	0.36
Draining in the mouth	1	0.36
Induce on amulets	1	0.36
Smoking leaves	1	0.36
Fumigation	1	0.36
Instillation into the ear	1	0.36
Introduction of the powder into the tooth	1	0.36
Lotion	1	0.36
Massage	1	0.36
Put in the mouth	1	0.36
wear as amulets	1	0.36

The most used administration route of drug recipes is the drink (122 cases out of 280: 43.57%) followed by the local application of drugs (19.29%). The other modes are used at a frequency less than 5%.

In pharmaceutical industries, certain vehicles products are used to facilitate the absorption of drugs by patients in order to permit it to reach as quickly as possible the affected organ [7]. It is the same in traditional medicine. Indeed, according to the information summarized in Table II, some drug recipes are associated with ash, native salts, salt, soft drinks, sugar, cassava, palm oil or castor oil, peanuts, corn mash, roasted corn and ointment.

To achieve the desired effect, traditional healers do the blending

of plant organs to prepare the drug recipes. This is the case of the decoction prepared with *Euphorbia hirta* leaves, *Carica papaya* roots and *Mangifera indica* roots used to fight against amoebas or treat amoebic dysentery. It is the same for the decoction prepared with *Jatropha curcas* roots, *Kigelia aethiopica* roots, *Psorospermum febrifugum* roots and *Antidesma venosum* roots used to treat gastritis. The decoction prepared with the blending of *Jatropha curcas* leaves and *Carica papaya* bark is used to clean fresh wounds or circumcision wound. Finally, other healers use the decoction prepared with the leaves of *Phyllanthus muellerianus* and *Ocimum americanum* for treating infantile convulsions or diabetes.

Frequency of indications and treated pathologies

The table 6 gives treated pathologies and their frequencies

Table 6. Pathologies and their frequency

N°	Pathologies or indications	Frequency	%
1	Various diarrheal diseases ((Diarrhoea (43), dysentery (15) and cholera (1), Type of Diarrhoea called "Kasumbi" (1)).	59	11.39
2	Sexual transmitted disease (Gonorrhoea (40), AIDS (1), syphilis (11), various STD (3),)	55	10.62
3	Various wounds ((Wounds (27), Circumcision wound (1), Persistent wounds (1))	29	5.60
4	Abdominal pain	21	4.05
5	Tooth disease (Tooth decay (15), Toothache (2))	17	3.29
6	Various diseases of eyes (Conjunctivitis (3), Eye ailments (5), sore eyes(2), blurred vision (1), Cataract (3), Ophthalmia (2))	14	2.70
7	Headache	13	2.51
8	Dysmenorrhea	12	2.32
9	Diabetes	12	2.32
10	Cough	11	2.12
11	Snake bite	10	1.93
12	Constipation	10	1.93
13	Intestinal worms	9	1.74
14	Stomach ache	7	1.35
15	Haemorrhoid,	7	1.35
16	Asthma,	7	1.35
17	Aphrodisiac	7	1.35
18	Painful menstruation	6	1.16
19	Hernia,	6	1.16
20	Gastritis	6	1.16
21	Sexual asthenia	5	0.97
22	Malaria	5	0.97
23	Hypertension	5	0.97
24	Fever	5	0.97
25	Cancer	5	0.97
26	Vomiting	4	0.77
27	Purgative	4	0.77
28	Infertility	4	0.77
29	Female infertility	4	0.77
30	Amoebas	4	0.77
31	Women abdominal pain	3	0.58
32	Ulcers	3	0.58
33	Skin disease	3	0.58
34	Schistosomiasis	3	0.58
35	Rheumatism	3	0.58
36	Pin worm	3	0.58
37	Jaundice,	3	0.58
38	Facilitate childbirth,	3	0.58
39	Convulsion,	3	0.58
40	Anaemia	3	0.58
41	Abscess	3	0.58
42	Wired	2	0.39
43	Threatened abortion	2	0.39
44	Sore throat and oral cavity,	2	0.39
45	Pain	2	0.39
46	Oligospermia,	2	0.39
47	Loss of appetite	2	0.39
48	Itching	2	0.39
49	Insecticide (bedbugs, lice, ticks).	2	0.39
50	Indigestion	2	0.39
51	Gencivite,	2	0.39
52	Gastric ulcer	2	0.39
53	Galactogenic	2	0.39
54	Epigastric pain.	2	0.39
55	Emetic	2	0.39
56	Ear infections.	2	0.39
57	Dizziness.	2	0.39

58	Dizziness due to pregnancy	2	0.39
59	Diuretic	2	0.39
60	Delayed development of the child,	2	0.39
61	Cough with vomiting (paediatric cases),	2	0.39
62	Burns	2	0.39
63	Bronchitis,	2	0.39
64	Vaginal pruritus,	1	0.19
65	Vaginal hypersecretion	1	0.19
66	Umbilical hernia	1	0.19
67	Traumatisms	1	0.19
68	Toilet teeth,	1	0.19
69	To help primiparous to give birth without pain.	1	0.19
70	Swollen testicles,	1	0.19
71	Strengthen the child to walk and for his health.	1	0.19
72	Stimulating	1	0.19
73	Sprains	1	0.19
74	Slump	1	0.19
75	Sickle cell anaemia,	1	0.19
76	Ring worm	1	0.19
77	Pruritus	1	0.19
78	Prevention of tetanus	1	0.19
79	Poison antidote	1	0.19
80	Pneumonia	1	0.19
81	Parasitic	1	0.19
82	Paralysis	1	0.19
83	Open collar during pregnancy	1	0.19
84	Obstructed childbirth,	1	0.19
85	Neuralgia	1	0.19
86	Nausea	1	0.19
87	Mycosis	1	0.19
88	Mumps	1	0.19
89	Mouth sores	1	0.19
90	Minor burns	1	0.19
91	Metrorrhagia	1	0.19
92	Measles	1	0.19
93	Male sterility,	1	0.19
94	Magical practice.	1	0.19
95	Lumbar pain.	1	0.19
96	Laxatives.	1	0.19
97	Lactation	1	0.19
98	Infections.	1	0.19
99	Infantile convulsion	1	0.19
100	Hiccups;	1	0.19
101	Haemostatic,	1	0.19
102	Helminth infections,	1	0.19
103	Hair straightener.	1	0.19
104	Gout,	1	0.19
105	Goitre	1	0.19
106	Gastric disorders	1	0.19
107	Gales	1	0.19
108	Furuncle	1	0.19
109	Fungal infections,	1	0.19
110	Fractures	1	0.19
111	Fall of the matrix	1	0.19
112	External haemorrhoid	1	0.19
113	Enteralgia,	1	0.19
114	Endometritis	1	0.19
115	Oedema,	1	0.19
116	Eczema	1	0.19
117	Dystocia,	1	0.19
118	Drastic purgatives,	1	0.19

119	Digestive disorders,	1	0.19
120	Dermatosis	1	0.19
121	Decreased urine output,	1	0.19
122	Colic,	1	0.19
123	Closing cervix after an abortion;	1	0.19
124	Clearance kidney	1	0.19
125	Childbirth (Reduce pain),	1	0.19
126	Chickenpox,	1	0.19
127	Chest pain	1	0.19
128	Buboes,	1	0.19
129	Bloating belly	1	0.19
130	Bleeding after delivery.	1	0.19
131	Bleeding	1	0.19
132	Ascites,	1	0.19
133	Ascariasis.	1	0.19
134	Antitussive	1	0.19
135	Antipyretic,	1	0.19
136	Antidote poisons,	1	0.19
137	Anthelmintic,	1	0.19
138	Amenorrhoea,	1	0.19
139	Abortive	1	0.19

The most commonly treated disease by studied Euphorbiaceae plant species is various diarrheal diseases (11.39%), sexually transmitters diseases (10.62%), various wounds (5.60%) and abdominal pain (4.05%).

Euphorbiaceae species are also indicated in the treatment of various eyes diseases (2.70%), headache (2.51%), diabetes (2.32%), cough (2.12%), snake bite (1.93%), constipation (1.93%), intestinal worms (1.74%), stomach ache (1.35%), haemorrhoid (1.35%) and asthma (1.35%). Their organs can be also used in the preparation of aphrodisiacs, antidotes, poison and insecticides. Others may be used against vomiting, dizziness, itching or to prevent tetanus.

In traditional gynaecology, some Euphorbiaceae can facilitate childbirth, help to the lactation of women after give birth, help primiparous to give birth without pain or prevent the fall of the uterus, allow closure of the cervix during pregnancy to eradicate abortion or threats closure of the cervix in a woman who has miscarried, dispel dizziness in pregnant women. Also, some species such *Cleistanthus milleri*, can cause abortions. Other species may also be used to treat female infertility or stop bleeding after childbirth.

Cancer (5 times quoted), pathology that can not be diagnosed by traditional healers, could be also treated by some Euphorbiaceae species in particular by the leaves and barks of stems *Cleistanthus milleri*, each organ of *Euphorbia heterophylla*, the latex of *Euphorbia ingens*, leaves and stems of *Manihot esculenta* and roots of *Manihot utilisima*.

The Euphorbiaceae are plant species with ornamental, commercial and medicinal values. However, some species of this family contain chemicals substances that can be the basis of poisoning or that can induce some diseases that are difficult to treat. This is the case of species of the genus *Euphorbia*, *Jatropha* and *Sapium* that contain toxic substances such as phorbols esters [23, 24, 25].

CONCLUSION

Ethnobotanical data from these surveys done in Lubumbashi and its surroundings have shown that Euphorbiaceae plant species are among the most used medicinal plants by traditional healers. The data collected showed that the leaves, roots, stems or their bark

are the most used plant organs. In addition, the decoction and the oral route administration are the most frequently used modes. The liquid form of many of these preparations taken by oral route could facilitate the absorption of active ingredients and thus, facilitate healing.

The species used in the treatment of diarrheal diseases, sexually transmitted diseases, cancer and other diseases will be subjected to extensive chemical and biological screening so that the results obtained may allow the development of new drug needed in the management of these pathologies.

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