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Medicinal Plants Used in Composition of Anti-Viral Hepatitis Recipes in Burkina Faso: Ethnobotanical Study

Mamadou Sawadogo, Mindiédiba Jean Bangou, Armandine Lema, Mindiempo Hyacinthe Thiombiano, Hermann Yempabou Ouoba, and Béboila Ouoba

ABSTRACT

Viral hepatitis is an inflammatory disease of the liver cells caused by cytopathic viruses. It constitutes a major public health problem. The aim of the present study was to identify the recipes used in the treatment of viral hepatitis in four cities of Burkina Faso and to select the most requested recipe for further analysis. Semi-structured interviews in the local language were conducted by the "snowball" technique among traditional medicine practitioners from May to October 2021. A total of 280 traditional healers (80.35% men) were interviewed and 74 species of medicinal plants belonging to 42 botanical families used in composition of 168 anti-viral hepatitis recipes were identified. The most frequently used organs were roots, followed by barks and then leaves with proportions of 34.64%, 26.07% and 20% respectively. Decoction (54,29%) and drinking (77,14%) are respectively the main method of preparation and administration of drugs. The study allowed the selection of one recipe that will be subjected to phytochemical and pharmacological analyses in order to isolate the molecules with hepatoprotective properties.

Keywords: Burkina Faso, hepatitis, recipes, traditional healers.

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I. Introduction

Hepatitis virus infection is one of the most common human viral infections worldwide [1]. Thus, Viral hepatitis accounts for a significant global disease burden and high mortality from liver cancer and cirrhosis [2], [3]. According to the World Health Organization data in 2021, 296 million people were living with chronic hepatitis B virus infection and 58 million people with chronic hepatitis C virus infection worldwide [4], [5]. In Burkina Faso, Cirrhosis and liver cancer constitute 65% of the reasons for hospitalization in the hepato-gastroenterology department of the Yalgado Ouédraogo University Hospital Center in Ouagadougou [6]. The prevalence of hepatitis B and C is respectively between 12-14% and 6.1% [7].

Modern treatments of viral hepatitis are expensive and have limited effectiveness by poor tolerance of side effects [8]. The current molecules (Lamivudine, Entecavir, Adefovir) involved in the management of patients are often resistant [9]. The only vaccine existing, the hepatitis B vaccine remains inaccessible to the poor free of the population in terms of its expensive cost [8]. This therapeutic complication forces people to turn to traditional medicine as an alternative. The population uses traditional pharmacopoeia for the treatment of several diseases including inflammatory diseases, diarrhea, malaria, hepatitis, diabetes, breast cancer [10]-[15]. However, few anti-hepatitis phytomedicinal formulations are available to the general public.

The richness of the Burkinabe flora allows us to hope to find sources of biomolecules active against viral hepatitis. Indeed, compounds derived from plants, such as phenolics, flavonoids, terpenes, and alkaloids, were found to exhibit potential antioxidant capacities [16]. Antioxidants that have the property of trapping free radicals can be a therapeutic way in viral hepatitis [8]. Faced with this observation, it is necessary to seek to know the recipes of medicinal plants used against viral hepatitis in order to develop them. In the vision to bring our modest contribution to Burkina Faso traditional medicine, the aim of the present study was to enumerate the recipes used in the treatment of viral hepatitis in four cities of Burkina Faso and to select the most requested recipe for further analysis.

II. Material and Methods

A. Ethnobotanical Area Investigation

The study was conducted in four provinces (Fig. 1) of Burkina Faso, specifically in cities of Bobo-Dioulasso, Dédougou, Boromo and Fada N'Gourma. Bobo-Dioulasso is located in Houet province at 11°10′37″ North latitude, 4°17′52″ West longitude, and an altitude of 423 m. Dédougou is located in Mouhoun province at 12°27′48″ North latitude, 3°27′38″ West longitude, and an altitude of 302 m. Boromo is located in Bale province at 11°44′43″ North latitude,

2°55′48″ West longitude, and an altitude of 263 m. Fada N'Gourma is located in Gourma province at 12°03′41″ North latitude, 0°21′30″ East longitude. Study cities are mainly inhabited by Bobos, Mossi, Dafing, Gourmanchtèman, San, Fulani, Bwaba, and Marka.

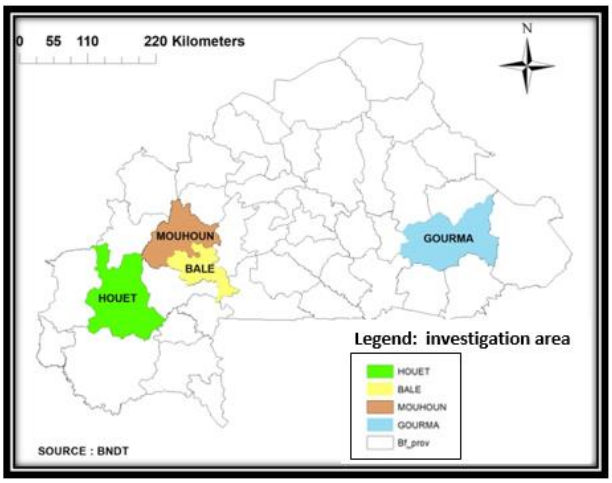

Fig. 1. Mapping of the study cities.

B. Data Collection

The ethnobotanical survey was carried out from May to October 2021. The data was collected using the forms from among traditional healers. Socio-demographic and ethnobotanical characteristics were the focus of the questionnaire on the forms. Five associations of traditional healers participated in the study, namely " Association of *Gulmu* Traditional Health Practitioners" (Fada N'Gourma), "Association of the Bale pharmacopoeia practitioners" (Boromo), "Regional Union of Associations of Traditional Practitioners of the Boucle Mouhoun" (Dédougou) and "Association of *Relwendé* and Wisdom Health Practitioners" (Bobo-Dioulasso). Semi-structured interviews in the local language (Dioula, Moré and Gourmanchtèma) were carried out using the "snowball" technique among the traditional practitioners. Interpreters were often needed. Possible errors (slips of the tongue, omissions) during the interview were minimized by asking the same question about a recipe in several ways in order to ensure that the traditional practitioner gave the same answer. Medicinal plant identification was done by a botanist of the Department of Botanic of the University Nazi BONI (Bobo-Dioulasso, Burkina Faso).

III. Data Analysis and Processing

The data recorded on the survey forms were then processed and entered into Excel version 2016. The data were analyzed using simple descriptive statistics methods. Thus, quantitative and qualitative variables are described using percentages.

IV. Results and Discussion

A. Socio-Demographic Profile of Respondents

A total of 280 traditional healers were interviewed, either a rate of 43.6%, 29.3%, 14.6% and 12.5% respectively in the cities of Bobo-Dioulasso, Dédougou, Boromo and Fada N'Gourma. The high rate of participation in Bobo-Dioulasso could be explained by the receptive nature of traditional practitioners and also their presence in several sales outlets. The low participation rate in Fada N'Gourma and Boromo could be explained by the reluctance of traditional practitioners and the absence of markets reserved for the practice of the trade. According to gender, both sexes practice pharmacopoeia, with a male predominance. In cumulation, we obtained 225 men (80.36%) and 55 women (19.64%). By city, we noted 76.23%, 85.37%, 92.68% and 68.57% of men in Bobo-Dioulasso, Dédougou, Boromo and Fada N'Gourma respectively (Fig. 2). According to a survey conducted by Lema *et al*. [11] in two of these cities found 80% and 70% men in Bobo-Dioulasso and Fada N'Gourma respectively. Other ethnobotanical study in Niger, such as those by Gbekley *et al*. [17] obtained 133/164 men traditional healers. The majority involvement of men has also been reported by other authors [12], [18]. Indeed, traditional medicine is often reserved for men in Burkina Faso as in other countries.

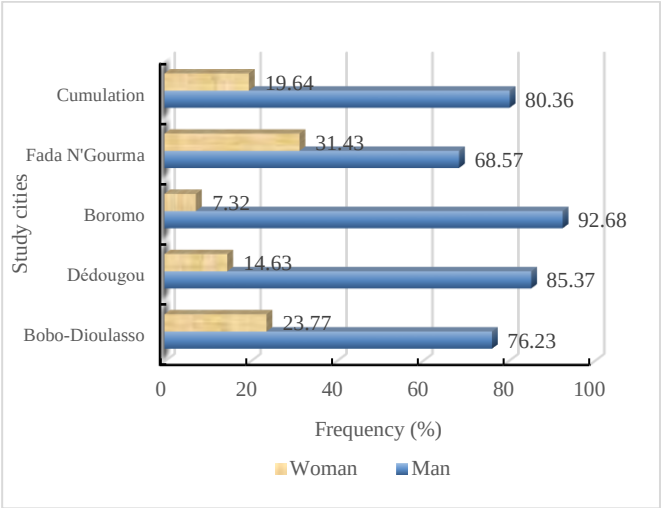

Fig. 2. Gender of respondents.

As for the age group concern, the traditional practitioners were all between 20 and 80 years of age, with the majority being 30-40 and 40-50 (Fig. 3). These two age groups alone represent 68.92% of the respondents. The survey reveals that the main actors in traditional medicine are adults, while young people in the 20-30 age group are less involved. According to the work of Hama *et al*. [19] in Niger on ethnobotanical knowledge and uses of *Combretum micranthum* G. Don. They also found an age range of 20-92 years, of which the age range 32-44 was the majority with a proportion of 29.61%. Indeed, the elderly are mostly the heads of households and represent the family authority, which could justify their majority in traditional medicine.

With regard to the education of the traditional practitioners surveyed, the majority were illiterate (74.64%) (Fig. 4). Our results are similar to those reported by Hama *et al*. [19] who also found 69.74% illiterate. Indeed, traditional medicine is much more reserved for poor populations.

As for the origin of the knowledge of traditional practitioners, the majority of respondents stated that they had inherited their knowledge from their parents. We obtained 100%, 80.49%, 84.15% and 69.67% proportions respectively in Fada N'Gourma, Boromo, Dédougou and Bobo-Dioulasso

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cities (Fig. 5). Indeed, knowledge of a recipe in traditional medicine is above all a family secret that is passed on from generation to generation through customs and oral tradition. It is therefore necessary to be of a mature age and to have a certain amount of confidence in order to access the knowledge of this medicine [17].

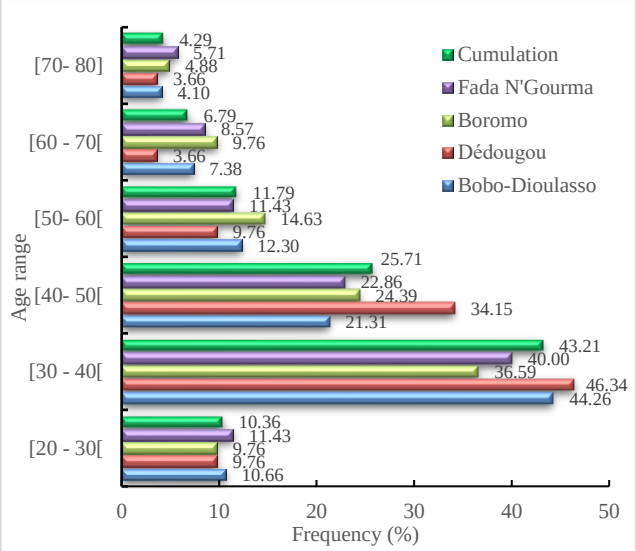

Fig. 3. Age range of respondents.

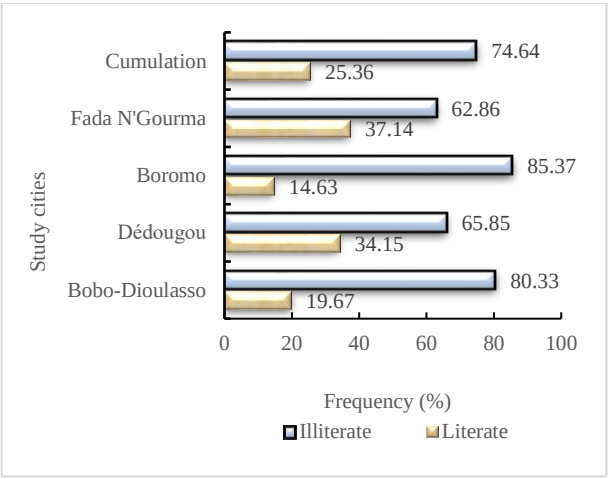

Fig. 4. Instruction level of respondents.

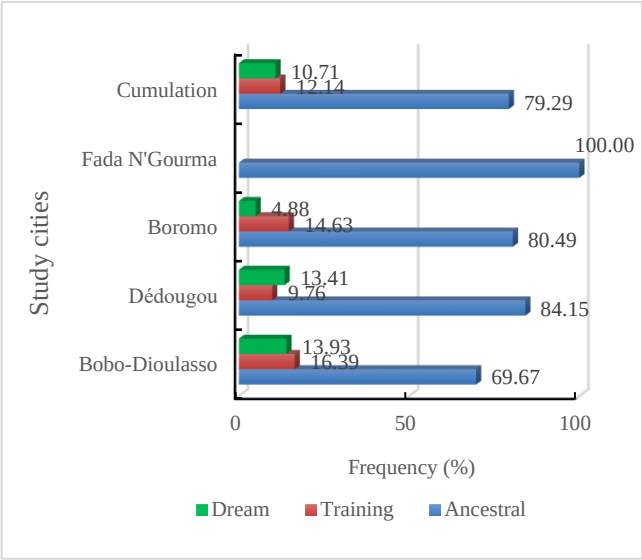

Fig. 5. Origin of knowledge of respondents.

B. Organ of the Plants Used in Composition of Anti-Viral Hepatitis Recipes

Hepatitis B or C virus infection causes free radicals to be produced in order to destroy the virus. These free radicals, produced in excess, attack the lipid and protein constituents of the hepatocytes and cause cellular lesions. These lesions may develop, in the event of chronicity to fibrosis, cirrhosis and hepatocellular carcinoma [8]. Antioxidants, known for their anti-free radical properties, could be a therapeutic means several in inflammatory diseases [11], [12], [20]. In our study, 168 medicinal plant recipes anti-viral hepatitis were identified relating to 74 medicinal plant species belonging to 42 botanical families. Thus, Various parts of the plant are taken and used alone or in combination in recipes composition. In cumulation of part used, we had roots (34.64%), barks (26.07%), leaves (20%), whole plant (10%), fruits (5%), seeds (3,57%) and bulbes (0.57%). The roots are mainly used, followed by the barks and the leaves. With regard to roots, 38.5%, 35.9%, 33.3% and 31.4% were found in Dédougou, Boromo, Bobo-Dioulasso and Fada N'Gourma respectively (Fig. 6). According to a review of the phytochemistry of the plants used in different recipes, compounds derived from organ (phenolics, flavonoids, terpenes, alkaloïds, saponins, and tannins) of the plants proposed by the traditional healers were found to exhibit potential antioxidant capacities (Table I). Furthermore, it is noted that despite the geographical diversity, traditional practitioners are unanimous on the use of roots, leaves and bark. Indeed, these organs are the storage site of secondary metabolites (Table I) responsible for biological properties [19]. These phytochemicals compound could be justify the choice of these organs by traditional healers. However, the massive use of roots could be detrimental to biodiversity. Thus, if measures are not taken to supervise traditional practitioners on good collection practices and techniques, the disappearance of these species would be a major loss for certain populations [15].

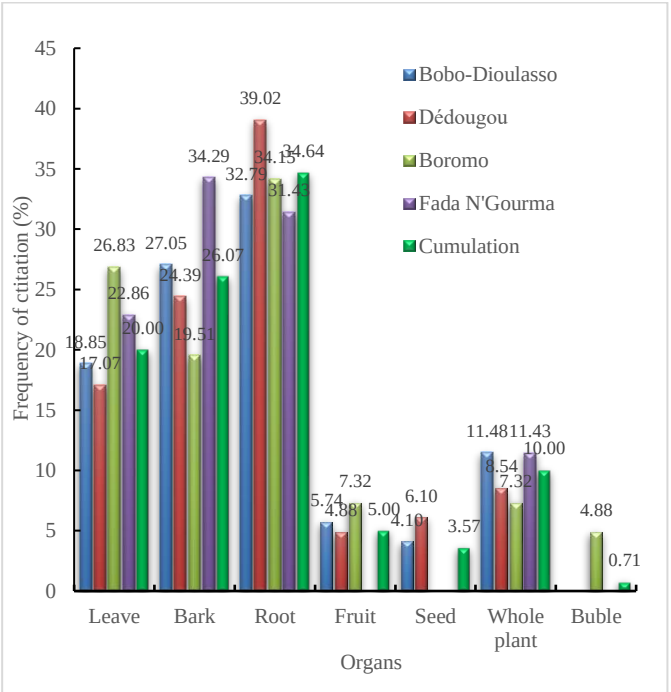

Fig. 6. Organs of plants used in recipes.

C. Method Of Preparation and Administration of the Recipe

Different methods are used by traditional practitioners for the preparation of recipes, namely decoction, maceration, infusion and powders. The study shows that decoction is the main method of preparation, with 57.8%, 51.4%, 48.7% and 47.4%, respectively in Bobo-Dioulasso, Fada N'Gourma, Boromo and Dédougou (Fig. 7). These high rates indicate that local people prefer decoction as a method of preparing recipes. Work reported by Ngunde *et al*. [21] also shows that decoction allows the collection of the most active ingredients and mitigates or cancels the toxic effect of some recipes. Similar studies by Thiombiano *et al*. [10]; Kinda *et al*. [22] and Sidio *et al*. [23] also indicate that decoction is the mode of reference for traditional practitioners with 50%, 46.7% and 32.7% respectively.

Concerning the administration, our study shows that three methods are mainly used as mode of administration. We noted drinking, bathing and purging. The main method of drug administration is oral (drinks), with 83.3%, 76.9%, 71.4% in Bobo-Dioulasso, Dédougou, Boromo and in Fada N'Gourma respectively (Fig. 8). Other authors have also reported that drinking is the main method of administration used in traditional medicine [14], [24]. Thus, our results are in agreement with the data in the literature.

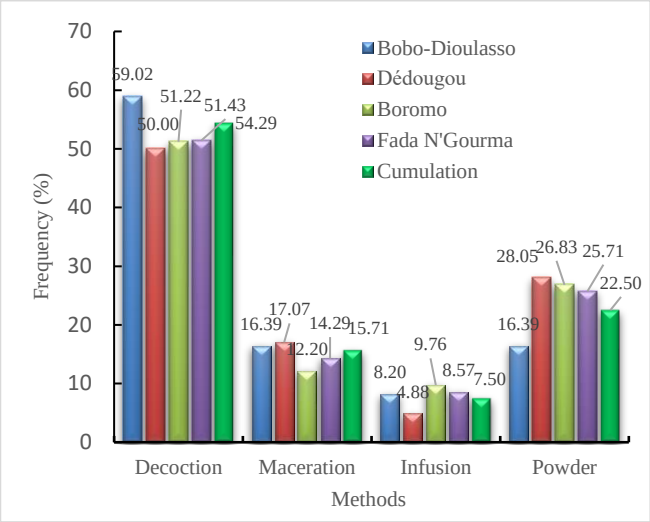

Fig. 7. Preparation mode of the recipes.

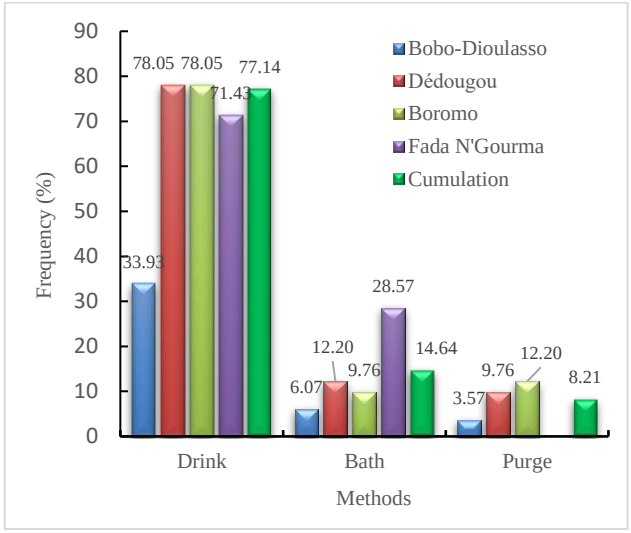

Fig. 8. Administration mode of the recipes.

TABLE I: LIST OF MEDICINAL PLANTS USED IN COMPOSITION OF ANTI-VIRAL HEPATITIS RECIPES AND PHYTOCHEMICAL REVIEW

Families	Species	Parts used	Local names	Phytochemicals	References
Acanthaceae	*Acanthospermum hispidum* DC.	Whole plants	Moirimalkoni (G)	Spathulenol and 3,7,11,15- Tetramethyl-2-hexadecen-1-ol	[25]
Agavaceae	*Agave sisalana* (Perrine ex Engelm.) Drummond & Prain	Roots	-	Saponins, Steroid, Sapogenin, Flavonoids	[26]
	Agave americana L.	Roots	-	Steroidal Saponin, Alkaloid, Flavonoids	[27]
Anacardiaceae	*Lannea microcarpa* Engl. & K. Krause	Roots, Barks	Péku-yiri (D) ; Sambga (M)	Tannins, Saponins, Sterols, Flavonoids Cardiac glycosides, Alkaloids	[28]
	Mangifera indica L.	Leaves, Roots	Mangoro yiri (D) ; Mango taiga (M)	Tannins, Saponins, Sterols, Flavonoids Cardiac glycosides, Alkaloids	[29], [30]
	Sclerocarya birrea (A.Rich.) Hochst.	Roots, Barks	Kuna yiri (D); Nobga (M)	Tannins, Flavonoids, Alkaloids, Saponins	[27]
Annonaceae	*Annona senegalensis* Pers.	Leaves, Roots, Barks	Mandé sounsoun (D); Badkudga (M)	Tannins, Flavonoids, Alkaloids, Saponins Sterols, flavonoids, coumarins	[27], [31]
	Xylopia aethiopica (Dunal) A. Rich.	Fruits	Kana fii (D) ; Kiparinsablo (M)	Alkaloids, Saponins, Flavonoids, Phenols, Resins	[32]
Apocynaceae	*Saba senegalensis* (A. DC.) Pichon	Roots, Leaves	Zaban (D); Wedga (M)	Tannins, Phenol, Flavonoids, Saponins, Anthocyanosides, Sterols, Triterpen, Coumarins	[33]
Asclepiadaceae	*Calotropis procera* (Aiton) R.Br.	Barks	Fogo fogo (D); Putru-puga (M)	Alkaloids, Steroids, Flavonoids, Tannins Phenolic, cardenolides, triterpeinoids	[34], [35]
Asteraceae	*Chrysanthellum americanum* L. (Vatke)	Whole plans	Ikbanpari (G)	Flavonoids, Coumarins, Saponins Anthracenosids, Tannins, Phenols, Cardenolids	[36]
Balanitaceae	*Balanites aegyptiaca* (L.) Del.	Seeds, Barks, Leaves	Zêgênê yiri (D); Kyegelga (M)	Terpenoids, Saponin, Phenolic, Alkaloids, Furanocoumarin, Flavonoid	[37], [38]
Bignoniaceae	*Crescentia cujete* L.	Fruits		Anthraquinone, Flavonoids, Tannins, Phenols, Cardenolides	[39]

TABLE I: CONT.

Families	Species	Parts used	Local names	Phytochemicals	References
Bombacaceae	*Adansonia digitata* L.	Roots	Sra yiri (D) ; Tohèga (M)	Tannins, Flavonoids, Sterols, Anthocyans, Coumarins, Alkaloids, Terpenes, Essential oils, Saponins and quinones	[40], [41]
	Bombax costatum Pellegr. & Vuillet	Barks	Boum boum (D); Voaka (M)	Tannins, Sterols, Alkaloids, Saponins, cardiac glycosides, Triterpenes,Flavonoids	[42]
Bromeliaceae	*Ananas comosus (L.) Merr*	Fruits	Annanan (M)	Alkaloids, Flavonoids, Proteins, steroid, Tannins, Carbohydrates, Tritepenoids, Saponins	[43]
	Striga hermonthica (Del.) Benth	Whole plants	-	Tannins, Flavonoids, Alkaloids, Saponins, Streroids, Terpenoids, Cardiac glycoside, Phlobatanins, Anthraquinones	[44], [45]
Burseraceae	*Boswellia dalzielii Hutch*	Barks	Gondrégno (M)	Alkaloids, Cardiac glycosides, Steroid, Triterpenes and glycosides, While tannin and flavonoids	[46]
Caesalpiniaceae	*Burkea africana Hook. f.*	Roots, Leaves	Siri (D); Sigdré (M)	Cathetic and Gallic tannins	[47]
	Cassia sieberiana DC.	Roots	Sindjan (D); Kumbr-saka (M)	Tannins, flavonoids, alkaloids, Saponins	[27]
	Detarium microcarpum Guill. & Perr.	Roots, Leaves	Tama kuba (D); Kagdga (M)	Tannins, Flavonoids, Alkaloids	[44]
	Piliostigma reticulatum (DC.) Hochst.	Roots, Barks	Bagande (M)	Tannins, Flavonoids, Coumarins, Alkaloids, Saponosides, Steroids Triterpenes	[48]
	Piliostigma thonningii (Schumach.) Milne-Redh	Barks	Yama(D); Bagem daa (M)	Alkaloids,Cathetic tannins, Gallic tannins, Saponins Flavonoids, Anthocyanins ,Leucoanthocyanes, Quinone derivatives,	[29]
	Tamarindus indica L.	Roots	Tomi yiri (D)	Tannins, Coumarins, Flavonoids, Anthraquinones, mucilages, saponosides	[29]
Caricaceae	*Carica papaya L.*	Seeds, Leaves	Papaye yiri (D); Papay tiiga (M)	Alkaloids, Flavonoids, Phenolics	[12], [49]
Caryophillacaeae	*Cassia alata* L.	Roots, Leaves	-	Flavanoid, Clove oil, Saponin, Terpenoids, Alkaloids	[50]
	Cassia obtusifolia L.	Roots, Barks	Kater nanguri (M); criki (D)	Emodin, Chrysophanol, physcion, obtusifolin, obtusin, au rantio-obtusin, chryso-obtusin, alaternin, questin	[51]
Cochlospermacea e	*Cochlospermum planchonii* Hook.	Roots, Leaves	Dribala (D) ; Sonsé (M) ; a féyiéna (G)	Tannins, Coumarins	[44]
	Cochlospermum tinctorium Perr.ex A. Rich.	Roots, Barks, Leaves	A soyiana (G)	Cardiac glycosides, Tannins, Saponins, Carbohydrates, Anthraquinones, Flavonoids	[52]
Combretaceae	*Anogeissus leiocarpus* (DC.) Guill. & Perr.	Barks, Leaves	Ngalama (D) Siiga (M); bu siebu (G)	Glycosides, Tannins, Flavonoids, Saponins, Terpenoids, Steroids	[53]
	Combretum micranthum G. Don	Roots, leaves	Djaani (G); Golobè (D); Randga (M)	Flavonoids, Saponins, Cyanogenic and cardiac glycosides, Alkaloids, Saponins, anthraquinones, steroids	[54], [55]
	Guiera senegalensis J.F. Gmel.	Roots, leaves	Koun gouè (D); Wilin-wiiga (M)	Alkaloids, Polyphenols, Saponins	[56], [57]
	Terminalia laxiflora Engl.	Roots	Wolon yiri (D) ; Kondré (M)	Alkaloids, Flavonoids, Tannins, Saponins, Cardiac glycosides	[58]
Ebenaceae	*Diospyros mespiliformis* Hochst. ex A. Rich.	Roots, Barks, leaves	Soun soun fii (D) ; Gaaka (M) ; bu gaabu (G)	Alkaloids, Tannins, Saponins, Triterpenes, Flavonoids, cyanogenic glycosides, Carotenoids, vitamin C and vitamin A	[59], [60]
Euphorbiaceae	*Euphorbia hirta* L.	Whole plants	Tougani sindji (D); Wal-bissim (M)	Terpenoids, Alkaloids, Steroids, Tannins, Saponin, Flavonoids, phenolic, Anthraquinones, Coumarins, Cardiac glycosides, Oils, Gums, mucilages, sugars	[61]
	Flueggea virosa (Roxb. Es Will.) Voigt	Roots	Balan balan (D); Sugdin-daa (M)	Alkaloids Tannins Saponins Phlobatannins Terpenes Flavonoids	[10], [62]
	Manihot esculenta Crantz	Leaves	Pangouma (G); Bandanku (D)	Flavonoids, phenolic	[63]
Fabaceae	*Chamaecrista nigricans (Vahl) Greene*	Barks, Leaves	Dougamadjala (D) ; Zandr-kua (M)	Anthraquinone (emodin, chrysophanol)	[64]
	Pterocarpus erinaceus Poir.	Barks	Noega (M)	Tannins, flavonoids, phenols and saponins.	[65]

TABLE I: CONT.

Families	Species	Parts used	Local names	Phytochemicals	References
Liliaceae	*Allium cepa L.*	Bubles	Djaba (D)	Flavonoids, Alkaloids, Saponins, Polysaccharides, Polyphenols	[66]-[68]
	Allium sativum L.	Bubles	Layi (M)	Carbohydrates, Tannins, Flavonoids, Phenols, Alkaloids, Terpenoids, Amino acids, Saponins, Cardiac glycoside	[69], [70]
Loranthaceae	*Agelanthus dodoneifolius (DC.) Polhill & Wiens*	Whole plants	Nêrêzouzou (D)	Flavonoids, Phenolic, Tannins, Steroid, Alkaloid, Anthraquinones, glycosides	[12], [71]
Malvaceae	*Walteria indica L.*	Whole plants	Yaar-yâmdé (M)	Alkaloids, Flavonoids	[72]
Meliaceae	*Khaya senegalensis (Desr.) A. Juss.*	Barks, Leaves	Djala (D); Kuka (M)	Alkaloids, Tannins, Flavonoids, Saponins, Phytates and Oxalates	[11], [73]
	Trichilia emetica Vahl	Roots	Soula fisan(D); Kinkirs taanga (M)	Saponins, Steroids/triterpenes, cardiac glycosides, Tannins, Flavonoids, Anthraquinones	[74], [75]
Mimosaceae	*Acacia nilotica (L.) Willd. ex Del.*	Roots, Leaves	Bagana (D); Pêg nênga (M)	Terpenoids, Tannins, Alkaloids, Saponins, Sterols, Cardiac glycosides, flavonoids Phenols, Anthraquinones, Carbohydrate	[76]
	Entada africana Guill. & Perr.	Roots	Sama-nèrè (D); Sêonego (M)	Tannins, Alkaloids, Terpenes, Resins, Sterols, Anthraquinone, Phenols, Saponins	[77], [78]
	Parkia biglobosa (Jacq.) R. Br. ex G. Don	Fruits	Nèrè (D) ; Roâanga (M) ; bu dubu (G)	Tannins, Flavonoids, Anthraquinones, Coumarins, Mucilages, Alkaloids, saponosides	[29], [44]
Moraceae	*Ficus carica* L.	Leaves	Kaba-woulé (D); Kamsaongo (M)	Steroids, Flavonoids, Tannins and Gallic catechin, Alkaloids, Anthocyanins, Quinone	[79]
	Ficus platyphaylla Del.	Leaves	Kaba-woulé (D); Kamsaongo (M)	Steroids, Flavonoids, Tannins and Gallic catechin, Alkaloids, Anthocyanins, Quinone	[80]
	Ficus polita Vahl	Barks	Tôrô yiri (D)	Alkaloids Flavonoids, Saponins, Sterols, Phlobatannins, Terpenoids	[81]
	Ficus thonningii Blume	Roots	Kuoga (M)	Tannins, Polyphenols, Flavonoids, Coumarins, Alkaloids, Saponosides, Steroids, Triterpenes	[31]
Moringaceae	*Moringa oleifera* Lam.	Leaves	Ardjina yiri (D); Arzen tiiga (M)	Flavonoids, Tannins, Triterpenoids, Saponins, Anthraquinones, Alkaloids	[82]
Musaceae	*Musa pardisiana* L.	Fruits	Banan tiiga (M)	tannins,saponins, reducing and non reducing sugars, sterols and triterpenes	[83]
Myrtaceae	*Psidium guajava* L.	Leaves	Goyake (G)	Quercetin, avicularin, apigenin, guaijaverin, kaempferol, hyperin, myricetin, gallic acid, catechin, epicatechin, chlorogenic acid, epigallocatechin gallate, and caffeic acid	[84]
	Syzygium aromaticum L.	Fruits	-	Saponins, Alkaloids, Flavonoids, Glycosides, Tannins, Steroids	[85]
Olacaceae	*Ximenia americana* L.	Whole plants	Mini guani (D) ; Lènga (M)	Saponins, Sterols, Terpenes, Polyphenol, Tannins, Flavonoids	[86]
Opliaceae	*Opilia amentacea* (Guili. et Perr) Endl. ex Walp.	Leaves	Nè bossi (D); Wag salega (M)	Flavonoids	[87]
Pedaliaceae	*Sesamum indicum* L.		Bènè yiri (D) ; Sibi (M)	Flavonoids, Phenolics	[88]
Phyllanthaceae	*Pseudocedrela kotschyi* (Schweinf.) Harms	Roots	Korogué (D); Siguedré (M)	Saponins, Flavonoids, Tannins, Glycosides, Anthraquinones, Steroids/terpenes, Alkaloids	[89]
Poaceae	*Bambusa vulgaris* Schrad. ex J.C.Wendl.	Leaves	Bambou (D) ; Tan wiiga (M)	Flavonoids Phenolics	[90]
	Cymbopogon citratus (DC.) Stapf	Whole plants	Tchê-kala (D)	Flavonoids, Saponins, Tannins Phenolics, carbohydrates	[91]
Polygalaceae	*Securidaca logipedunculata* Fres.	Roots, Leaves, Barks	Djoro (D) ;Pelga (M)	Tannins, Flavonoids, Alkaloids, Phenols, Saponins, Sterols	[31]
Rhamnaceae	*Ziziphus mauritiana Lam.*	Roots	Tonmonon yiri (D) ; Magunuga (M)	Tannins, Flavonoids, Alkaloids, Phenols, Saponins, Sterols	[92]
Rubiaceae	*Mitragyna inermis (Willd.) Kuntze*	Roots, Barks, Leaves	Bu yelinbu (G); Djoun (D); Yilga (M)	Tannins, Coumarins, Alkaloids, Flavonoids, carbohydrates, Cardiac glycosides, Steroids Anthraquinones, Triterpenes; Carotenoids, Leucoanthocyanins, Quinone, Anthocyanins, Saponosides	[93]
	Gardenia erubescens Sta	Roots	Gulé musso(D); Subudga (M)	Alkaloids, Flavonoids, Steroids, iron, zinc, selenium, glutamic acid, arginine, phenylalanine, tryptophan and tyrosine	[94]
	Sarcocephalus latifolius Sm.	Roots	Bati (D)	Tannins, Flavonoids, Alkaloids	[44]
Rutaceae	*Citrus aurantifolia (Christm.) Swingle*	Barks, Roots	Lémourougoumou (D)	Saponins, Phenolics, Steroids, Alkaloids, Anthraquinones, Flavonoids, Carbohydrates	[37], [95]

TABLE I: CONT.

Families	Species	Parts used	Local names	Phytochemicals	References
Sapotaceae	*Vitellaria paradoxa C.F. Gaertn.*	Leaves, Roots, Barks	Sii yiri (D) ; Taanga (M)	Saponins, Steroids, Tannins, Alkaloids, Flavonoids, phenolics, anthraquinones, Sterols, terpenes, carbohydrates	[96]-[98]
Tiliaceae	*Grewia bicolor Juss.*	Whole plants	Twega (M)	Flavonoids, Polyphenols	[99]
Verbenaceae	*Vitex doniana Sweet*	Leaves	Koto (D); Andga (M)	Alkaloids, Steroids, Flavonoids, Tannins, Glycosides, Saponins	[45]
Zingiberaceae	*Zingiber officinale Rosc.*	Leaves	Gnanmancou (D)	Alkaloids, Flavonoids, Phenols, Tannins, Terpenoids, Saponins, Phytosterols, Anthroquinones	[100]

(D): DIOULA; (M): MOORE; (G): GOURMANTCHE.

V. Conclusion

In traditional medicine of Burkina Faso, several recipes are used in the treatment of viral hepatitis. In particular, in the four study cities, 74 species belonging to 42 botanical families are used in the composition of 168 recipes. The most frequently used organs were roots, followed by barks and then leaves. Decoction and drinking are respectively the mainly method of preparation and administration of drug. Results obtained will constitute the basis of the next step of our research. Thus, the most requested recipe will aim at making a bio-guided evaluation to identify the polyphenolic compound implied on the one hand hepatoprotective activities, and on the other hand to isolate the main bioactive molecules.

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Conflict of Interest

Authors declare that they do not have any conflict of interest.

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