Recherche de plantes à potentialités antihypertensives dans la biodiversité du Burkina Faso

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Résumé :
Les auteurs rapportent les résultats d'une évaluation des connaissances des tradipraticiens de santé et l'utilisation de produits de la pharmacopée traditionnelle dans le traitement de l'hypertension artérielle dans deux districts sanitaires du Burkina Faso. Des entretiens ouverts et semi structurés ont été réalisés auprès des tradipratciens de santé des deux districts pour recenser les moyens de prise en charge de l'hypertension artérielle. Les plantes utilisées ont été collectées pendant le séjour sur le terrain en compagnie des guérisseurs traditionnels. Les échantillons de référence ont été rassemblés et identifiés par les auteurs avec l'aide des spécialistes en botanique. Cinq (5) des espèces les plus citées ont fait l'objet de recherche bibliographique et d'études biologiques en vue de rechercher leurs propriétés biologiques potentiellement antihypertensives. Dans cette étude, soixante et onze (71) guérisseurs ont été inscrits dans le district sanitaire du Ioba et trente-quatre (34) dans le Passoré. L'enquête révèle que quelques guérisseurs traditionnels ont hérité leurs connaissances et certains affirment détenir ce savoir-faire suite à la révélation par un génie. Au total cinquante-deux (52) espèces végétales appartenant à vingt-sept (27) familles de plantes ont été inscrites. La plupart d'entre elles sont des plantes sauvages. Les recherches bibliographiques indiquent que *Sclerocarya birrea* A. Rich. Hochst possèderait des effets vasorelaxants, hypotenseurs et anti hypertenseurs. Les graines de *Parkia biglobosa* R. Br. Ex G. Don sont également douées d'une activité hypotensive. Nos travaux de recherche ont révélé que les graines de cette plante avaient aussi des effets vasorelaxants. Nous avons également pu montrer des effets vasorelaxants des extraits de *Anogeissus leiocarpus*, de *Guiera senegalensis* J. F. Gmel et de *Lannea microcarpa* Engl. and K. Krause. Cette dernière aurait également des propriétés hypotensive et antihypertensive. Ainsi, cette investigation a permis de révéler des plantes potentiellement antihyperensives. Les cinq plantes sélectionnées sont de bons candidats pour des investigations futures pour leurs propriétés antihypertensives.

Mots clés : Ethnomédecine, Pharmacopée traditionnelle, Hypertension artérielle, Plantes médicinales

Research for plants with antihypertensive potentialities in the biodiversity of Burkina Faso

Abstract :
The authors report the results of an assessment of the knowledge of traditional healers and the use of traditional medicine products in the treatment of hypertension in two health districts in Burkina Faso. Open and extensive interviews together with semi-structured surveys were used to collect the information obtained. Plant pharmacopoeia was documented by collecting material in field assays carried out with traditional healers. The specimens and reference samples were identified and collected by the authors with the help of a couple specialists. Five (5) of the most quoted species were the object of bibliographical research and biological studies to look for their biological properties as regard to arterial hypertension. In this study, seventy one (71) healers were registered in the sanitary district of Ioba and thirty four (34) in Passoré. The investigation reveals that some traditional healers inherited their knowledge and some others assert holding this knowledge from revelation by a genius. Fifty two (52) botanical species belonging to twenty seven (27) plant families were registered. Most of them are wild plants. The bibliographical researches indicate that *Sclerocarya birrea* A. Rich. Hochst would possess vasorelaxant, hypotensive and anti hypertensive effects. The seeds of *Parkia biglobosa* R. Br. Ex G. Don are also endowed with a hypotensive activity. Our research works also revealed that, *Anogeissus leiocarpus* (DC) Guill. et Perr and *Guiera senegalensis* J. F. Gmel and *Lannea microcarpa* Engl. and K. Krause possessed vasorelaxant effect. *Lannea microcarpa* also show hypotensive and antihypertensive effects. Thus, this investigation allowed to reveal plants potentially antihyperensive. Five selected plants are good candidates for future investigations for their anti hypertensives properties.

Keywords : Ethnomedicine, Traditional Pharmacopoeia; Hypertension, Medicinal plants

Introduction

Among the cardiovascular diseases, hypertension draws the most current attention and is considered as a serious problem of public health, both in rural and urban area (in : Médecine d'Afrique Noire, 1999). In tropical Africa, the number of hypertensive patient is about 10%, sometimes reaching 16% or 17% in some countries; the rate of prevalence is 11% in Togo, 13% in Benin and Côte d'Ivoire and 23% in Burkina Faso (Bertrand, 1995). In Burkina Faso, 50% of the patients hospitalized at the hospital of Ouagadougou in the cardiovascular affections services suffer from hypertension, with death rate of 46.30% (Niakara et al. 2003; Serme et al., 1991). Some countries in western Africa produce various preparations containing plants locally to treat many diseases including hypertension (World Health Organization, 2000). As it is well-known, knowledge on natural remedies allows collection of medicinal plants with proven pharmacological efficacy to be implemented in primary health care as proposed by World Health Organization; thus can encourage the incorporation of traditional medicine to the modern health system. Traditional ethnobiological knowledge has provided answers for the treatment of hypertension. Among the ethnobiological investigations regarding issues related to hypertension, many studies were undertaken by many research laboratories including a number of traditional recepies worthy of interest (Adjanohoun and De Souza, 2002; Nacoulma, 1996; Sérémé et al., 2001; Tokoudagba et al., 2009, 2010; Yao, 2005). Keeping this view, a study has been taken up with the objective of evaluating the knowledge and use of natural pharmacopoeia for the treatment of hypertension in Ioba and Passoré provinces in Burkina Faso.

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Materials and methods

Ethnobotanical survey area : Burkina Faso is a landlocked Sudanese and Sahelian country situated in the heart of West Africa (figure 1). It is located between 9°20'N 15°3'E, and 2°20'N 5°3'W. Ioba province (161,484 inhabitants) is located in the southwest of Burkina. *Dagara* group dominates on the ethnic level in the loba. It constitutes approximately 65,41% of the population and in order of importance the *lobi* group comes first 9.79% followed by *Bwa* with 8.06% and the *mossi* with 5.52%. Passoré province (322 873 inhabitants) is an area mostly inhabited by the *Mossi* people and located in the north of Burkina Faso.

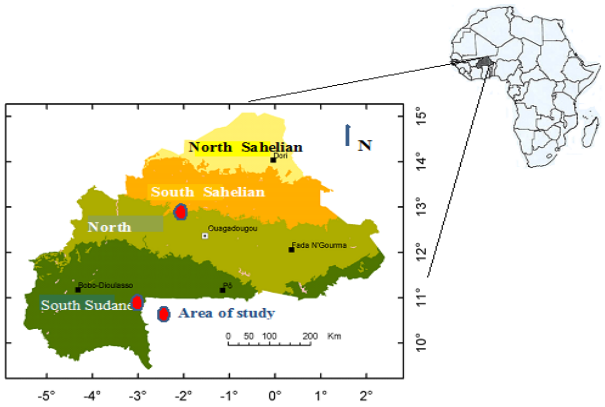

Figure 1 : Map of current phytogeographic features of Burkina Faso (in Bognounou *et al.* 2010)

Currently, the main phytogeographic features of Burkina Faso is the Sahelian domain; which is arid and covers the northern part of the country with a rainfall < 600 mm. The second domain is the Sudanese, which is less arid and covers the rest of the country and receives a rainfall >700 mm. Basically, a soudano-Sahelian transition zone distinguishes from north to south. (figure 1). The natural vegetation of Burkina Faso has been the subject of many studies (Guinko, 1984 ; Fontes and Guinko, 1995). The Vegetation in the Sahelian domain is a grassy, bushy, shrubby and thicket steppe usually quite sparse. Ligneous species may come together locally to form more or less penetrable bushes. Passoré province belongs to this domain. The Sudanese savannahs gradually take over the steppe formations. While the herbaceous ground cover fills out higher, the ligneous species increase. Ioba province belongs to this domain.

Socio-medical characteristics of the two area of study : Studies related to the province of the Ioba inhabited mainly by the Dagara ethnic group and the province of Passoré inhabited by the Mossi ethnic group. Interviewed healers belong to these ethnic groups. The local health system is characterized by a multiple sanitary context that includes domestic or homemade medicine and the official medicine of health care centre run by doctors and sanitary agents. In Ioba east, it consist of 7 departments and 1 common of full exercise with 1 medical district, 1 Medical Centre with Chirurgical Antenna, 4 Medical Centre and thirteen 13 Center of Health and Social Promotion. For the Province of Passoré the studies were conducted in 5 departments including 1 medical district and 4 Center of Health and Social promotion. Traditional medicine in Burkina Faso is still not incorporated to the official medicine even though the use of natural remedies is one of the main therapeutic options to which local inhabitants appeal (Nacoulma, 1996).

Study methods and techniques : This study was conducted during December 2005 to June 2007. Individual discussions with the officials (high commissioners of the provinces and prefect of department) and the persons in charge of decentralized engineering departments of the ministry of health were carrying out in the study area. In Ioba province, interviewed healers belong to Dagara ethnic group, those in Passoré province belong to Mossi group. Traditional healers and officials were briefed on the research project and its objectives, before being interviewed; a common objective is to improve local health system, involving natural remedies as suggested by World Health Organization (WHO, 2000). Survey form was prepared as proposed by Bognounou *et al.* (1975). This study was based on open, extensive and recurrent interviews. Semi-structured questions were also conducted with traditional healers and health care professionals of different sex and age. This information was complemented with participative observations. For the qualitative method, the etiologic factors connected to hypertension were the bases of the appreciation of healers knowledge on hypertension, e.g., stress, sedentariness, excessive consumption of salt, weight excess, alcohol, stimulants (cola, coffee…), lack of activity etc. They were asked to quote at least one of these factors. The symptoms retained in our study to evaluate the knowledge of the Hypertension were the giddinesses, cephalgias, buzzes of ear, epitasis, swarmings, night pollakiuries, facial paralysis, night apnea. The tradipratician of health could identify the symptoms of the hypertension when any one of the symptoms selected was mentioned. Quantitative method was based on the number of uses reported for each plant and the frequency of mention, as regard to the total number of reports. Species use was validated when the answers of at least two informers coincided in at least two retained symptoms. This is the theory of convergence (Fleurentin *et al.*, 1991) ; the direct convergence occur when by cross-checking, the same plant is indicated for a symptom which covers arterial hypertension, in different socio-cultural contexts.

Table I: medicinal plant used in treating hypertension disease in Ioba and Passoré Provinces (Burkina Faso)

Family	Species	Collector	Voucher number	Plant part used	Preparation and administration (Recipe)	Citations (%)
Anacardiaceae	*Heeria insignis* O.Kuntze	WINKOUN D.H.	N°84	Barks of roots		0.84
	Lannea acida A. Rich	FOURNIER A.	N°2596	Barks of trunk	Infusion or Decoction/	3.36
	Lannea microcarpa Engl. et K. Krause	KOURA S.P.	N°4686	Barks of trunk,		2.52
	Lannea velutina A.Rich	JOUIN M.	N°8203	Barks of roots	Wash and Beverage	1.68
	Sclerocarya birrea (A. Rich.) Hochst	JOUIN M.	N°360	Barks of trunk or leaves	Decoction/Wash and Beverage Maceration/ Beverage	3.36
Annonaceae	*Annona senegalensis* Pers.	MADSEN J.E.	N°5295	Roots	Unprepared/Fraction and massage of face/Maceration/Wash	1.68
Apocynaceae	*Saba senegalensis* (A.DC) Pichon	FOURNIER A.	N°2741	Trunk and leaves	Maceration/Beverage	0.84
	Strophantus hispidus D.C	OUATTARA S.	N°119			0.84
	Strophantus sarmentosus DC.	WINKOUN D.H.	N°121	Barks of roots and leaves	Decoction/Wash and Beverage	0.84
	Thevetia neriifolia Juss.	OUATTARA S.	N°122			0.84
Asclepiadaceae	*Calotropis procera* Ait.F.	MADSEN J.E.	N°6139	Barks of roots	Maceration/Beverage	0.84
Balanitaceae	*Balanites aegyptiaca* (L.) Del.	MADSEN J.E.	N°6191	Barks of roots	Decoction/Beverage	1.68
Bignoniaceae	*Stereospermum kunthianum* Cham.	GROUZIS M.	N°245	Barks of trunk or leaves	Decoction/Wash and beverage	1.68
Bombacaceae	*Adansonia digitata* L.	FOURNIER A.	N°2038	Barks of roots or leaves	Incineration/internal use	4.20
	Bombax costatum Pelligr. et Vuillet	BOGNOUNOU O.	N°21	sap	Unprepared/Massage (external use)	0.84
Capparaceae	*Boscia senegalensis* (Pers) Lam. Ex Poir.	GROUZIS M.	N°273	Barks of roots or leaves	Bark/maceration/Leaves/Decoction/Drink	0.84
	Capparis corymbosa L.	OUATTARA S.	N°283	Barks of roots and leaves	Decoction/Drink	0.84
Celastraceae	*Maytenus senegalensis* (Lam.) Exell.	KABORE A.	N°51	Barks of roots	Decoction/Drink	0.84
Caesalpiniaceae	*Afzelia africana* Smith ex Pers.	FOURNIER A.	N°2414	Barks of roots	Decoction/Drink	0.84
	Cassia sieberiana DC.	JOUIN M.	N°8103	Barks of roots	Decoction/Wash and beverage	0.84
	Detarium microcarpum Guill. et Perr.	FOURNIER A.	N°2948	Barks of roots	Decoction/Wash	0.84
	Piliostigma reticulatum (DC.) Hochst	MADSEN J.E.	N°5329	Trunk and leaves	Incineration (internal and external use)	1.68
	Piliostigma thonningii Milne-Redh.	WINKOUN D.H.	N°89	Trunk and leaves	Decoction/Wash	1.68
	Tamarindus indica L.	MADSEN J.E.	N°5326	Barks of roots	Incineration (external use)	1.68
Chrysobalanaceae	*Parinari curatellifolia* Planch. Ex Benth.	BOGNOUNOU O.	N°8	Barks of trunk and leaves	Decoction/beverage	0.84
Combretaceae	*Anogeissus leiocarpus* Guill. et Perr.	MADSEN J.E.	N°5799	Barks of trunk or leaves	Decoction/beverage	2.50
	Combretum glutinosum Perr ex DC.	MADSEN J.E.	N°5972	Barks of roots	Decoction/Wash and beverage	0.84
	Combretum molle R.Br. Ex G.Don	MADSEN J.E.	N°5854	Barks of roots	Decoction/Wash and beverage	0.84
	Guiera senegalensis J. F. Gmel	ELLENBERGER E.	N°1921	Leaves	Unprepared/Friction and massage	3.36
	Pteleopsis suberosa Engl. Et Diels	FOURNIER A.	N°2093	Barks of root	Decoction/Wash and beverage	0.84
	Terminalia macroptera Guill et Perr	FOURNIER A.	N°2007	Barks of roots	Decoction/Wash and beverage	0.84
Ebenaceae	*Diospyros mespiliformis* Hochst.ex A. Rich	OUADBA J.M.	N°423	Barks of roots	Decoction/Wash and beverage	0.84
Euphorbiaceae	*Bridelia scleroneura* Müll.Arg.	BOGNOUNOU O.	N°9	Trunks and leaves	Infusion or Decoction/ Vaporization and Wash	0.84
Fabaceae	*Lonchocarpus laxiflorus* Guill. et Perr.	BOGNOUNOU O.	N°120	Barks of roots	Decoction/Wash and beverage	0.84
Flacourtiaceae	*Oncoba spinosa* Forsk	OUATTARA S.	N°554	Barks of roots	Decoction/Wash	0.84
Loganiaceae	*Strychnos spinosa* Lam	JOUIN M.	N°8309	Barks of roots	Decoction/Wash	0.84
Meliaceae	*Khaya senegalensis* (Desr.)A.Juss.	ALEXANDRE D.Y.	No number	Barks of trunk	Incineration + butter from *Vitelaria paradoxa* C.F. Gaertn (Sapotaceae) (external use) Decoction/ Vaporization and Wash	1.68
	Pseudocedrela kotschyi (Scheiwf.), Harms	DALE E.H.	N°72	Barks of trunk	Decoction/Wash	0.84
	Trichilia emetica Vahl	FOURNIER A.	N°2577	Barks of roots	Decoction/Wash or beverage	0.84
Mimosaceae	*Acacia albida* Del.	FOURNIER A.	N°3135	Barks of trunk	Decoction/Wash	0.84
	Acacia nilotica (L) Wild. Ex Del	IRBET	N°680	Barks of trunk	Decoction/Wash and beverage	0.84
	Parkia biglobosa R.Br. Ex G.Don	WINKOUN D.H.	N°669	Seeds and leaves	Seeds/Fermentation or roasted/internal use/Leaves/Decoction or incineration/internal use	10.92
	Prosopis africana (Guill. et Perr.) Taub.	ALEXANDRE D.Y.	N°5	Barks of the roots	Decoction/Wash	0.84
Moraceae	*Ficus sycomorus* CC Berg	MADSEN J.E.	N°5769	Barks of trunk and fruits	Decoction/Beverage	0.84
Olacaceae	*Ximenia americana* L.	MILLOGO E.	N°20	Barks of roots	Decoction use interns	6.72
Poaceae	*Cymbopogon schoenanthus* (L.) Spreng	GROUZIS M.	N°775	Whole plant	Decoction/Vaporization and Wash	0.84
Rhamnaceae	*Ziziphus mauritania* Lam.	JOUIN M.	N°8203	Barks of roots	Decoction/Wash	0.84
Rubiaceae	*Nauclea latifolia* Smith	FOURNIER A.	N°2858	Barks of roots	Decoction/Wash	0.84
Sapotaceae	*Manilkara multinervis* (Bark) Dubard	FOURNIER A.	N°2872	Barks of trunk	Decoction/Beverage	0.84
	Vitellaria paradoxa C.F. Gaertn.	KOURA S. P.	N°4683	Bark of trunk and butters	Incineration + Butters/ Massage of the face/Decoction/Wash and beverage	19.32
Verbenaceae	*Vitex diversifolia* Bak.	OUATTARA S.	N°29	Barks trunk and leaves	Decoction/Beverage	0.84
Vitaceae	*Cissus quadrangularis* L.	MADSEN J.E.	N°5574	Trunk, leaves and fruits	Decoction/Beverage	0.84

This validation can include unique indication when it corroborates other ethnobotanical studies of the area (Nacoulma, 1996).

Plant and extract : Lannea microcarpa trunk bark was collected from the region of Loumbila, Burkina Faso (zone of savanna) in the dry season. Plant materials were verified to be identical samples at the specimen previously deposited at this herbarium of Department of Vegetal Production, National Centre of Scientific Research and Technology (Voucher specimen n°4686). Plant material was collected in field in the presence of traditional healers. Reference samples were collected and plant materials were mainly identified with the help of specialists from the Department of Vegetal Production, National Centre of Scientific Research and Technology, Burkina Faso before their use. Samples were deposited in this herbarium. The aqueous extract was prepared as follow: the dried powder (100 g) of trunk bark of Lannea microcarpa was extracted in 500 mL of distilled water. Raw material was boiled during 15 minutes, filtered, frozen and lyophilized. The fractions extracts were prepared from the aqueous extract using solvent-solvent extraction as follow: After frozen, the aqueous extract was sequentially fractionated with a methylene chloride (3 x 50 mL) and ethyl acetate (3 x 50 mL) respectively. The resulting fractions were then concentrated on a rotary evaporator and finally freeze-dried.

***Measurement of blood pressure* :** Male Wistar rats (12–14weeksold) were used. Rats were anaesthetized with pentobarbital (1.5g/kg,i.p.). The trachea was exposed and cannulated to facilitate spontaneous respiration. Two catheter (PE-50) were implanted in the right jugular vein and left carotid artery for recording of arterial blood pressure and drug administration, respectively. Blood pressure and heart rate were monitored using a pressure transducer connected to the Harward isolated preamplifier, and displayed on one channel of an oscillograph. After stable blood pressure had been obtained, each anaesthetized animal received doses of 0.1 and 3 mg/kg of the *Lannea microcarpa* extract and fractions, and blood pressure was registered when the values reach a steady state. Parallel experiments were performed with the vehicle. For the study of the antihypertensive effect, an increase of the blood pressure was obtained by an administration of the adrenalin (75 µg/kg weighty). The antihypertensive effect of plant extract was compared with those of the prazosin (10 µg/kg).

Statistical analysis : All data were expressed as mean ± S.E.M. Two way ANOVA were used to determine significant differences between groups. Mean values were considered significantly different when $p<0.05$.

Results

Socio-cultural aspect : Seventy one (71) healers were listed in Ioba and 34 in Passoré. A very weak participation by the women (17 out of 71) was observed due to the gender factor (weight of the traditions): In Passoré province, out of 34 healers met, 5 were female. Hence, in the whole provinces, 105 traditional healers were met, whose age varied from 40 years to 70 years with 10 to 40 years of practicing experience. They are organized in departmental and provincial associations in relation to the health service. In both visited provinces, the consultations proceed in the residence inside a room or under a shed. The costs of the service are authentic and in symbolic system. For example for the same remedy the male patient would spend 333 FCFA plus a cock and a female patient would give 444 FCFA plus a hen (3 is a male number and 4 is female).

So the visited Healers zones are thus authentic healers for the community. Consequently the pressure of their activity on the natural resources, in particular floristic, can be described as negligible. In Ioba province, 66 % of the traditional healers inherited their knowledge through patrilineal line; 10 % of which affirm to hold their knowledge of the patronymic matrilineal line. The other 24 % healers would have contracted their art by revelation of a genius returned by a dream or a pathological demonstration of psychological to psychiatric type having led them to installation of a furnace bridge or a sanctuary devoted to this effect (figure 2A). In Passoré province, 78.95 % of the cases the knowledge is related to the heritage in patrilineal line. Rest 21.05% acquired by revelation of a genius as mentioned earlier (figure 2B).

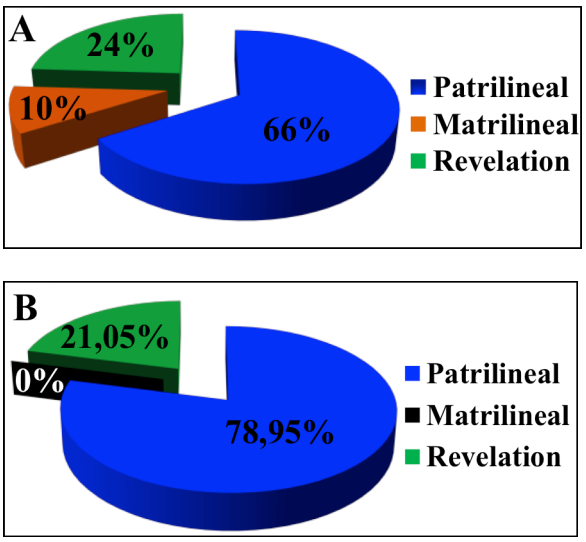

Figure 2 : Origins of the knowledge of traditional healers in Ioba (**A**) and Passoré (**B**) Provinces.

Etiology and symptomatology of the disease : Regarding the knowledge of etiologic factors of hypertension, 15% of those interviewed were unaware of the causes of this disease. Remaining 75% attributed the etiologic factors as salt and stress respectively as order of importance. Alcohol and sedentariness were also mentioned by them. Hypertension was considered by 30% of them as a hereditary disease. The possibility of a supernatural origin in hypertension was also mentioned by 50% of them. The most quoted symptoms of hypertension remained as giddinesses (60%) and cephalgias (19%), followed by the facial paralysis (15%), fever and tachycardias (6%). In general, 71.85% of the traditional healers of the province of Passoré and 33% for Ioba have knowledge of at least one symptom of hypertension.

Reported plant used and administration : A total of fifty-two plant 52 species belonging to twenty seven 27 families were listed. Table I represents the medicinal plants quoted in this investigation. All the species used are wild plants except for *Thevetia neriifolia*. A recipe contained one or more plants. The most represented families according to the number of species were Cesalpiniaceae and Combretacae (6 species), Anacardiaceae (5 species), Apocynaceae and Mimosaceae (4), Euphorbiaceae and meliaceae (3). Majority (99%) of the plants were under ligneous family except for *Cymbopogon schoenanthus*. All the traditional healers prepared themselves the recipes. The most used parts of plants were the barks of roots (40%), followed by the barks of trunk (30%), leaves (24%) and the other parts like sap, seeds, fruits or whole plant (6%) (figure 3A). The Healers from Ioba more often used the barks of roots. The major forms of presentation of the remedies were decoction, maceration, and incinerated powders (figure 3B).

The products are also presented in the form of pomade to the butter from *Vitelaria paradoxa*, but this butter is used as excipient. The major route of administration is oral; some were administering by wash and inhalation. Administration doses were dependent on the age of the patient. Sometimes it was repeated 2 to 3 times per day during 3 days period for a male patient and 4 days for a female patient. Small stocks of remedies are prepared to face the night cases. If not the preparations were made instantly. The dry products were preserved for one year or more compared to one week for the liquid remedies. Administration of adrenalin to anesthetized rats causes a sustained increase in their blood pressure (data not shown). After investigation, results showed that Lannea microcarpa aqueous extract and fractions revealed hypotensive and antihypertensive effects (figure 4A and 4B) on anesthetized rat; the better effect is obtained with acetonic fraction. Moreover, prazosin taken as positive control quickly reduced (Emax = 100%) the elevation in blood pressure induced by adrenaline in comparison to Lannea microcarpa extracts (data not shown).

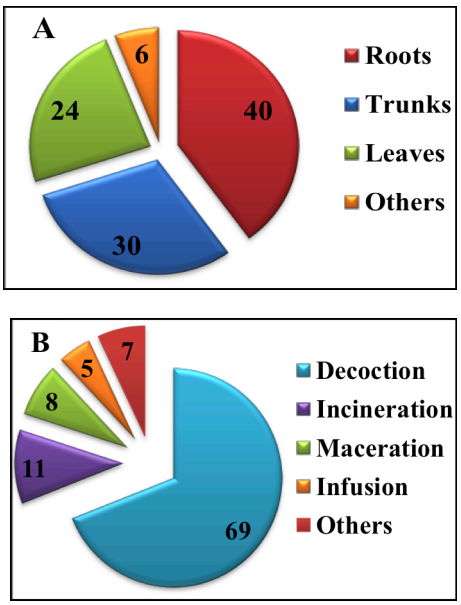

Figure 3 : Parts of plants used (**A**) and different galenic presentations (**B**) for local remedies preparation by Ioba and Passoré Provinces traditional healers to treat hypertension.

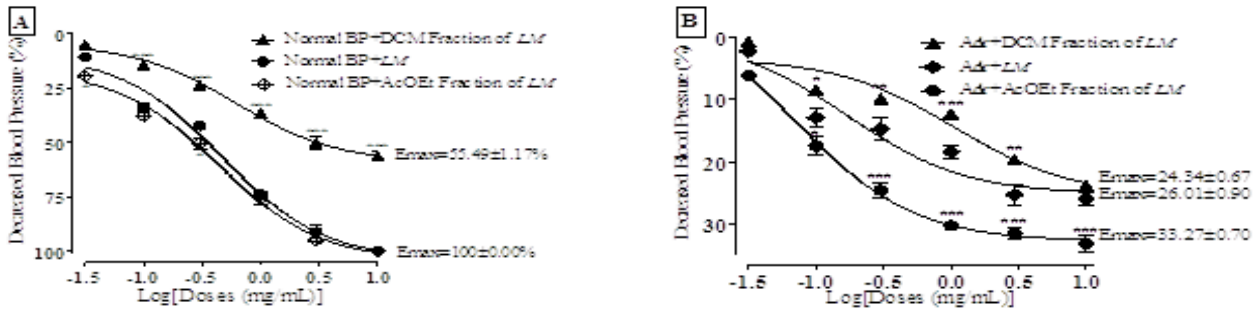

Figure 4 : (A) Effects of aqueous extract of *Lannea microcarpa* (LM) and its fractions [methylene chloride (DCM) and ethyl acetate (AcOEt)] on the normal blood pressure (PA) of anesthetized rat. (B) Effects of aqueous extract of LM and its fractions on induced high blood pressure on normotensives rat. (n=6 *p<0.05 versus LM).

Discussion

The practice of traditional medicine in both the areas of the study remained traditional considering the symbolic payment for the treatment. The practice was not for money or profit making as it was the case of bio-medicine. This confirms observation made by Tamboura *et al.*, (2000) for ethnoveterinary medicine of Passoré province. The transmission of the knowledge is thus done mainly from father to son; what often causes the retention of information, the healers preferring to keep this knowledge within their lineage. The training consists of the participation of the pupils during the collection of the raw material. They are also involved in preparation of the remedies and the diagnosis of the disease/ ailment. Those who learn this knowledge from a genius refuse to teach to anyone else because they are scared of the anger of their 'genius' teacher. The transmission of the knowledge thus remained identical in both the zones, except that the matrilineal inheritance is not found in mossi area (Passoré). The people of Ioba maintain a dual relationship both patrilineal and the matrilineal simultaneously with some variations within the lobi and the wile people. But it is the matrilineal system which dominates (Guingane and Minougou, 1994). In the center of Burkina and in the large cities like Ouagadougou and Bobo Dioulasso, another way of transmission of knowledge was noticed, which was without any family relationship with the healer (Yao, 2005). This represents nevertheless a small proportion; the transmission of the knowledge is mainly within the family of the healers. Traditional healers treat the hypertension fairly well; 71.85% healer from Passoré and 33% from Ioba could treat the disease or could relater the symptoms to the disease. Others could address to one or more disorders which associated with this disease. A few of them proceed by the clinical steps to diagnose the disease. In the traditional system it is a description of clinical signs instead of a disease *sensu strict*o. These various forms of administrations of treatment are common to other African traditional medicines (Noumi *et al.*, 1999; Tabuti *et al.*, 2003). To make its powders, drying is done in the sun. There is a possibility of bacterial and fungal infection of the plant during this kind of drying process. Duration of treatment in these two provinces is identical, and also followed the same in Bafia, Cameroun, for the same disease (Noumi *et al.*, 1999). This also suggest some sort of calming effect rather than a total remission of the disease. Majority of the plants which are used are commonly found in the traditherapeutic arsenal of the other areas of the Burkina Faso (Yao, 2005). In our study, the most quoted plants were *Parkia biglobosa* and *Guiera senegalensis* for the province of Ioba, *Sclerocarya birrea* and *Anogeissus leiocarpus* for Passoré. It was noted that most of the species used were of native origin (99%) and in plant pharmacopoeia they are mentioned as important natural resources for therapeutic uses of the Dagara and Mossi group. A great diversity of plants was used in Ioba, which is certainly related to better bio-diversity of the phytogeographic domain. Our preliminary studies and a bibliographical revision on the biological activity of the mostly cited species revealed that some of them possess pharmacological activities supporting the antihypertensive activities. The extract of the bark of *Lannea microcarpa* is reported to have a powerful inhibiting effect on phosphodiesterases; this extract is also provided of vasodilatory effects. (Ouédraogo *et al.*, 2010). Furthermore studies reveal hypotensive and antihypertensive activities. It is also known that leaves of *Parkia biglobosa* in combination with the bark of the stem are used for the preparation of remedies against hypertension (Adjanohoun *et al.*, 1989; Nacoulma, 1996; Tokoudagba *et al.*, 2009). Assane *et al.* (1994) had also described the hypotensive and antihypertensive properties of seeds of this plant. Studies from our laboratory (Ouattara, 2009) underlined the vascular properties of fermented and terrified seeds of *Parkia biglobosa*. Tokoudagba *et al.*, (2010) revealed that Procyanidin-rich fractions from the leaves of this plant induced endothelium-dependent relaxation involving NO and EDHF in porcine coronary artery. In fact our field study reveals that the fermented seeds are used in combination with other extracts of plants especially in the southwest of Burkina Faso (Ioba province). Nacoulma (1996) had reported that the leaves and stems of *Guiera senegalensis* are used in the level of the central plate (mossi group) of Burkina Faso against hypertension. This study confirms the report and shows that this indication is common to several areas of Burkina Faso. Our results suggest that vasodilatory effect may be involved in leaves of *Guiera senegalensis* antihypertensive properties (Ouédraogo, 2008). We also revealed that *Anogiessus leiocarpus* possessed hypotensive and antihypertensive properties (Belemnaba, 2007). These observations may involve vasodilatory effect (Ouédraogo *et al*, 2008). *Sclerocarya birrea*; leaves, bark of the trunk and the pulp of the fruit are used against hypertension (Guinko, 1984; Nacoulma, 1996). Yao (2005) reported that this plant was used in the central plate of Burkina Faso (Mossi people) for the treatment of hypertension. *Sclerocarya birrea* was largely studied and many researches revealed that extract from this plant inhibit calcium mobilization. It is reported to possess hypotensive as well as anti hypertensive properties and having vasodilatory effects (Ojewole, 2006; Belemnaba, 2007; Belemtougri *et al.*, 2001); due to the presence of several known chemical compounds (Ojewole, 2004; Belemnaba, 2007).

Some of the plants used for treating hypertension possibly have other additional properties like antidiabetique in *Sclerocarya birrea* (Ajewole, 2004; Dimo *et al.*, 2007), anti-inflammatory and anti-microbial in *Parkia biglobosa* (Millogo-Kone *et al.*, 2006, 2007) etc. with pharmacological confirmation. For *Anogeissus leiocarpus*, its pestcidal property and several studies underlined its inhibitory effects on *Plasmodium falciparum* (Okpekon *et al.*, 2003; Vonthron-sénécheau *et al.*, 2003). Reports on trypanocidal properties (Shuaibu *et al.*, 2008) and anti fungical activities (Batawila *et al.*, 2004) were also proven.

Conclusion

The ethnobotanic investigations carried by the traditional healers of the provinces of Ioba and Passoré enabled us to collect information on the practice of traditional medicines in the field of hypertension. One hundred and five (105) healers were interacted and it was observed that more than half of them treat symptoms which could be related to hypertension, confirming the potential of local medicine for healthcare in Burkina Faso. A significant number of medicinal plants are used for this treatment. But it remains a fact that evaluation of the effectiveness of these treatments is imperative. Demonstrating the bioactivity of extracts from these plants in correspondence with their traditional use will justify the use of these natural remedies for the primary health care of local inhabitants. It also can allow incorporation of modern and traditional medicine which in turn will provide a greater articulation and understanding between the different forms of medical practices. In order to confirm the medicinal uses documented in this study, phytochemical, pharmacological and toxicological studies must be carried out on the plants identified, especially those with a high frequency of citations.

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