Diabetes and arterial hypertension resorts of treatments and plants used for their treatments in three phytogeographic areas of Cameroon

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ABSTRACT

There are three principal resorts of diseases' treatment in Africa that include the mixed traditional and conventional medicine, the pure traditional medicine and the pure conventional medicine. The objective of this study was to determine the importance of resorts of treatment for selecting efficacious medicinal plants used for the management of diabetes and/or arterial hypertension in Cameroon. The resorts of diabetes and/or arterial hypertension treatment preferred by 1131 Cameroonians, selected in 58 socio-cultural groups and plants used were evaluated. This sample of interviewees was distributed as follow: 293 in coastal dense humid rain forests (phytogeographic area 1), 577 in continental dense humid rain forests (phytogeographic area 2) and 561 in Guinean and Soudano-Zambesian savannahs (Phytogeographic area 3). The combination of traditional and conventional medicine was the most favorable therapeutic resort of diabetes and/or arterial hypertension treatment (58,89%), following by pure traditional medicine (38,72 %) and pure conventional medicine (2,39%). These main resorts present manifold variances in many social groups including. The more important variances include Self herbal medication and consultation of traditional healers (21,75%); self herbal medication and consultation of medical doctors (33,08%); traditional healers, self herbal medication and consultation of medical doctors (22,64%). The percentages in brackets correspond to the proportion of interviewees recorded. The interviewees who preferred traditional medicine know more available and efficacious medicinal plants. Therefore with their aid 33 plants which relieve the health condition of some diabetic and/or hypertensive suspected or indirect and confirmed patients were recorded. The most important of these plants that include Azadirachta indica, Momordica charantia, Phyllanthus amarus, Phyllanthus niruri, Laportea ovalifolia, Ceiba pentandra, Allium cepa, Persea americana and Catharanthus roseus relieve the followed up diabetic with hypertension patients. These plants revealed interesting for the potential management of diabetes and hypertension. Meanwhile the recorded plants needed to be detailed investigated for their chemical and pharmacological properties necessary for drugs discovery.

Introduction

The resorts of diseases' treatments depend on the culture, the academic standard, the geographical situation of the residence of people, the standard of living, the matrimonial status, the type of profession, the age brackets of people, the type of disease and the patient condition. It is also linked to the frequency of the disease (Regroupement québécois des maladies, 2004). Therefore the study was aimed at determining the importance of resorts of treatment for selecting efficacious medicinal plants used for the management of diabetes and/or arterial hypertension in Cameroon. The main reason for indigenous people to choice a pure traditional medicine is the knowledge of medicinal plants or the present of a relative traditional healer. People who preferred pure traditional medicine can provide important information about medicinal plants. The traditional medicine such as it is practiced nowadays, reveals that it not like someone believe, hermetically sealed, congeal, in time and in the space.

Today, a vast store of knowledge concerning therapeutic properties of medicinal plants has accumulated through either experiences or knowledge evolved and transferred to the generation of tribal people, traditional healers or practitioners (Lokondo Mozouloua D. 2004). But interviewees need strategic methods to follow them before identifying who among the population is a potential older of good information. The medicine needs new drugs for the management of diabetes and hypertension. The progression of the resistance to medicines is partially the result of their bad use that has rendered useless several antibiotics and other drugs that save life. These two tendencies explain the necessity for researchers and pharmaceutical companies for urgently looking for new sources of treatments, which are oriented more and more throughout the traditional medicine (Priya Shetty 2010); UN Economic and Social Council, 2009; WHO, 2007).

Material and methods

Detailed traditional resorts of treatment and ethnopharmacological thorough herbal medicine preparation

The survey was conducted nearby 1131 informants from 58 tribes of Cameroon, in a random distribution. Folklore and modern medical information on diabetes and arterial hypertension' resorts of treatments were recorded during interviews and discussions, following a semi-structured ethnopharmacological detailed methodology developed in Tsabang N. *et al*. 2015a. Samples of recorded usual plants were collected, dried, identified and confirmed at National Herbarium of Cameroon, and conserved in the Institute of Medical Research and Medicinal Plants Studies.

Distribution of interviewees

The 1131 interviewees are distributed as follow, according to some social characters: from their environment: 301 city-dwellers and 830 villagers; from academic standard: 727 illiterates and 404 educated (academic standard ≥ FSLC: First School Living Certificate); from purchasing power: 921 poor people and 210 riches [annual income < 370 US$ (World Bank)]; from religion : 738 animists, 313 Christians and 80 Muslims; from sex : 394 men and 737 women; from profession : 70 traditional healers, 10 ethnobotanists or botanists, 05 physicians, 07 nurses, 397 housewives, 502 ethnoveterinarians-farmers, 37 cattle breeders, 21 hunters, 20 organic chemistry, 11 physiologists, 06 pharmacists, 25 sellers, 06 shepherds and 14 others; from familial situation: 1046, matrimonial status: 42 bachelors et 43 widows and widowers; from age brackets : 91 age between 30 and 40 years, 327 age between 41 and 50, 349 age between 51 and 60, 210 age between 61 and 70, 114 age between 71 and 80, and 40 are between 80 and 90 (Tsabang N. *et al.* 2015b); from socio-cultural groups and some European and Central Africa interviewees (table 1, table 2 and table 3); from 3 principal phytogeographic regions (coastal dense humid rain forests, continental dense humid rain forest and soudano-zambesian savannahs (carte 1)

Identification of recorded plants

The ethnobotanical survey carrying out in these units, beside interviewees selected in different tribes, may engender several plants (table 1, table 2 and table 3).

The table 1 shows the presence of Bamileke and Ewondo respectively outside West and Centre regions which is their actual territory. They are

installed in Mungo (Littoral region) after the colonial obliged works. They become pioneers or employees of industrial plantations. Now they are definitively dwelled in the Mungo division.

The table 2 reveals again the presence of Bakola Pygmies. They are dispersed in Bipindi subdivision in the first phytogeographic region and in Lolodorf subdivision in the second phytogeographic region. Kaka which are principally found in the East region of Cameroon have a small group in Ndian division of the South West region. In this phytogeographic region Ewondo is the most important group visited following by Bamileke. Bassa are dwelled inside the two first phytogeographic regions.

A total of 58 sociocultural groups (composed by 16 in coastal rain forests phytogeographic region, 14 in continental rain forests phytogeographic region, 23 in guinian and soudano-zambezian savannahs region were explored during the interwiews.

This sample of interviewees presents all the characteristics susceptible to provide reliable information and to promote the screening of many diabetic and hypertensive patients and plants used. Two categories of patients and their treatments were recorded.

Suspected or indirect patients: these are patients who are treated by traditional healers based on signs, symptoms and/or complications of diabetes and/or arterial hypertension that they develop. Their treatment was called suspected or indirect treatments.

Convincing or direct patients: these are patients identified previously by medical doctors who often use plants in familial medication. Their treatment was called **potential treatment.**

Self familial treatment: it is the treatment of patients by themselves or by family's members, from medicinal plants of familial patrimony or popular medicine. Two types of plants were identified:

Suspected or indirect plants: these are plants used by both traditional healers and to fight against at least 3 signs, 3 symptoms and/or 3 complications of the two pathologies. The pharmaceutical preparations derived from these plants are called suspected or indirect recipes.

Usual or direct plants: these are plants that are indicated by patients or traditional medicine practitioners as antidiabetic and/or antihypertensive. The ethnopharmaceutical preparations derived from these plants are called usual or direct recipes.

Results and discussion

Choices of therapeutic resorts

The different preferable therapeutic resorts of diabetes and hypertension treatment are grouped in 3 following principal set:

- Traditional medicine that is represented by self herbal medication which is the utilization of plants known in the family; consultation of traditional healers and sequential or simultaneous self herbal medication and consultation of traditional healers

- Conventional medicine represented by consultation of medical doctors; consultation of medical doctors and self-medication (use of manufactured drugs without medical prescription) and self-medication
- Mixed or combined resorts: represented by consultation of medical doctors and self herbal medication; self herbal medication and self-medication; traditional healers and consultation of medical doctors; traditional healers, self herbal medication and consultation of medical doctors and self herbal medication, self medication and consultation of medical doctors. Table 4 presents the different percentages of the interviewees per treatment preferable resort.

Statistical analysis

Comparison between the three types of resorts

The number of interviewees who have preferred the mixed traditional and conventional medicine, the pure traditional medicine and the pure conventional medicine resorts for diabetes and arterial hypertension's treatment are respectively 666, 438 and 27

If the three types of interviewees have the same chance to be met during the survey, there is equal probability: p = q = t = 1/3. The three types

of interviewees form each a trinomial distribution. It was about to compare the observed percentage for each type of interviewees to hypothetic value. According to the hypothesis zero (no difference between the three types of interviewees) the three types of interviewees have the same chance to appear during the survey. In this case they have the same prevalence in the population. The variance of this probability is $V = pqt/n$ with n = 1131 (total number of interviewees) $V = 1/3 \times 1/3 /x 1/3 /1131 = 0, 00003274715$. Standard error: false = 0,00572251. The observed values are:

Mixed traditional and conventional medicine = a/n ± false = 0, 5889 ± 0, 0146   a = 666; Traditional medicine = a/n ± false = 0,3872 ± 0,0145   a = 438

Conventional medicine = a/n ± false = 0, 0239 ± 0, 0045   a = 27

The different observed gap of hypothetic value is:

0,3872–0,3333 = 0,0539 ;   0,3333 – 0,0239 = 0,3094   0,5889-03333 = 0,2556.

By definition, these gaps are 2.6 times superior to standard error; we concluded that there was a significant difference between these three groups of interviewees at 95 %. The interviewees who preferred mixed traditional and conventional medicine were dominant.

Until what limits the variations of each resorts can be put on the account of chance? The normal variable with zero mean or the unit standard deviation is $d = a/n – p$: false. So for traditional medicine resort the unit standard deviation: $d = a/n – p$:false= 33, 2431

For conventional medicine resort the unit standard deviation: $d = a/n – p$: false = 22,0752

Mixed traditional and conventional medicine resort variations: $d = a/n – p$: false = 18,2323

The confidence intervals for the true unknown proportion were: 404,7569 to 471,2431 for resort traditional medicine; 4,9248 to 49,0752 for resort conventional medicine and 647,767 to 684,232 for resort mixed traditional and conventional medicine, at 95 % coefficient of security. The probability so that the observed proportions

of interviewees' types remained in these intervals, if the survey began again in the same conditions, was more increased. This sample was widely representative for the three types of interviewees in Cameroonian's population. In the research of an efficacious resort of diabetes and/or hypertension's treatment, the population practice simultaneously or sequentially all alternative resorts to medical doctor's action.

Do exist in the population a group which practices the contrary of the general tendency? To respond to this question, the similar analysis have permit to compare the diabetes and arterial hypertension treatment's resorts preferred by interviewees which are distributed in the following social groups:

- Illiterates, educated, poors, riches grouped in fig. 1;

- Pagans, Christians, Muslims in fig 2;

- Men and women (distribution per sex) in fig. 3;

- Town dwellers and villagers in fig. 4;

- Distribution of interviewees per age brackets in fig. 5;

- Diabetic and/or hypertensive condition in fig. 6;

- Matrimonial status (brides and grooms, bachelors and single women and widowers and widows) in fig.7.

It emerges from this analysis that exist a significant difference between the resorts traditional medicine, conventional medicine and mixed medicine, preferred by interviewees of social groups, two by two compared. We conclude that excepted the brides and grooms, the bachelors and single women and the widows and widowers (Fig.7) who choice a little bit the pure traditional medicine, the practice of alternative modes of medical doctors' actions in the diabetes and/or arterial hypertension' treatment and their complications, is a general fact for all the social strata in Cameroon.

Suspected or indirect patients recorded at the traditional healers'

Nine three (93) **suspected or indirect** patients in total were recorded and distributed as

follow: thirteen diabetics with hypertension patients (13), implying 13.98 % ; fifty two diabetics (52), implying 55.91 % and twenty eight hypertensive patients (28), implying 30.11% (table 1a)

Suspect or indirect plants used for suspect or indirect patients (suspected treatments)

Thirty-seven (37) suspected and/or indirect plants in total were recorded. They were distributed in function of three categories of patients: 12 among them (32,42 %) were separately used for the suspected treatment of suspected diabetic with hypertensive patients; 13 among them (35,16 %) were separately used for the suspected treatment of suspected diabetic patients and 12 (32,42 %) were separately used for the suspected treatment of suspected hypertensive suspected patients. Plants which improve the health condition of patients have attracted our attention.

Six recorded plants which improve the health condition of diabetics with hypertension patients possess the confirmed hypoglycemic and/or hypotensive properties according to previous pharmacological studies. *Azadirachta indica*, *Morinda lucida*, *Ceiba pentandra*, *Allium cepa* (Bep, 1986); *Persea americana* (Berhaut, 1975) and *Catharanthus roseus* (Bep, 1986) are these plants, with both hypoglycemic and hypotensive properties.

Seven recorded plants which improve qui the health state of diabetic patient have hypoglycemic properties or hypoglycemic molecules. These plants are *Momordica charantia* (Pousset, 1989); *Rhizophora racemosa* (Bep 1986); *Albizia ferruginea*, *Albizia lebbek* (Kerharo and Adam 1974) and (Barret et Kiefer, 1998); *Spathodea campanulata* (Niyonzima *et al*., 1993); *Bridelia micrantha* and *Sclerocarya birrea* (Bep, 1986).

Seven identified plants that improve the health state of hypertensive patients have hypotensive activities. These plants are: *Holarrhena floribunda* (Paris and Moyse, 1971); *Funtumia elastica, Voacanga africana*, *Picralima nitida*, *Piper guineense* and *Rauvolfia vomitoria* (Bep, 1986) and *Albizia adianthifolia* with the extract confirmed hypotensive (Kerharo and Dam, 1974).

Twenty of the ninety-three suspected patients represented by 10 diabetics, 7 hypertensive patients and 3 diabetics with hypertension, implying 21.50 % were previously identified in hospitals, where they were hospitalized at least one time. The treatment of traditional healers that they received, have improved their health condition. Therefore they asserted to have regularly satisfaction. Then we decided to follow up diabetics, hypertensive patients and diabetic with hypertension patients who use plants, in self familial medication for confirming this statement. The selection of these patients is not based on the signs, symptoms and/or complications that they develop like previously for suspected or indirect patients' selection, but by a diagnostic of a physician before the treatment. They are confirmed patients.

Clinical follow up of diabetics and/or hypertensive patients

One hundred and six (106) diabetics, 66 hypertensive patients and 10 diabetics with hypertension patients, for a total of 182 identified patients have been followed (table 2b).

Ethnopharmacological preparation of herbal remedies and ethnomedical administration

❖ This mark before a recipe indicates that the recipe was used to improve the health condition of suspected or indirect diabetic with hypertension patients.

➢ This mark before a recipe indicates that the recipe was used to improve the health condition of suspected or indirect diabetic patients.

• This mark before a recipe indicates that the recipe was used to improve the health condition of suspected or indirect hypertensive patients.

Plants and recipes recorded in the coastal dense humid rain forests (phytogeographic area 1)

1-Mucuna pruriens: Boil 0,2 g of seeds powder per kg of the body weight in 250 ml. Filter and drink the filtrate, repeat the operation times per day.

2-Phyllanthus niruri: Macerate 1 g of aerial parts per kg of the body weight, in 2 l of water, for 2 h. Drink 250 ml of filtrate 3 times per day. The filtrate also serves as laxative with higher doses.

3-Phyllanthus amarus: Macerate 1 g of aerial parts per kg of body weight, in 2 l of water, for

2 h. Drink 250 ml of filtrate 3 times per day. The filtrate also serves as laxative with higher doses.

➢ *4-Rhizophora racemosa* : Boil 2 g of stem bark per kg of body weight, in 2 l of water, for 15 mn. Drink 250 ml of decoction, 3 times daily.

❖ *5-Catharanthus roseus*: Infuse 40 g of leave and 40 g of fresh root in 1 l of water, for 4 h. Drink 250 ml of filtrate, 3 times per day.

• *6-Rauvolfia vomitoria* : Maintain in ebullition 1,5 g of root bark per kg of body weight in 2 l of water. Drink 250 ml of decoction, 3 times per day. The strong doses and the prolonged use provokes gastric ulcer (Bep, 1986).

Plants and recipes recorded in the continental dense humid rain forests (phytogeographic area 2)

7-Vernonia glabra: Clean and cut 100 g of rhizome, add to that 3 l of water. Maintain in ebullition, for 30 mn. Filter and drink 250 ml of filtrate, 4 times per day.

➢ *8-Momordica charantia*: Boil 2 g per Kg body weight of stem, leaves, flower and fruit powder in 2 l of water. Drink a teaspoon of herbal tea, Drink 300 ml of filtrate 3 times daily. The strong doses are toxic. Pregnant women must avoid taking this preparation (Arvigo and Balick, 1998).

9-Anacardium occidentale : Macerate 50 g of fresh leaves previously crumpled and 50 g of powder in 2 l of water, add 250 ml of juice of false fruit. Drink 3 times per day, 250 ml of filtrate.

❖ *10-Persea Americana*: infuse 1g of young leaves and bud per kg of body weight, in 2 l of water. Drink 250 ml of filtrate, 3 times per day, for 7 days.

11-Pterocarpus osun : Boil 100 g of stem bark and 100 g of wood in 4 l of water, for 30 mn. Drink 250 ml of filtrate every 6 h, for 5 days.

❖ *12-Allium cepa*: Infuse 200 g of cut bulb in 2 l of water. Drink 250 ml of filtrate every 6 h.

13-Momordica foetida: Macerate 80 g of fresh leaves in 2 l of water, then use the filtrate to rup the painful muscles and numbed feet. Drink 250 ml of decoction, 2 times per day, for 7 days.

❖ *14-Ceiba pentandra* : Maintain in ebullition 300 g of stem bark in 4 l of water, for 30 mn. Drink 250 ml of decoction, every 6 h, for 5 days. The excess and the prolonged use can provoke vomiting and purgation.

➢ *15-Albizia ferruginea* : Boil 200 g of root bark and 100 g of wood in 4 l of water, for 30 mn. Drink 250 ml of filtrate 2 times per day, for 5 days. The strong doses and the prolonged usage are toxic.

• *16-Albizia adianthifolia* : Maintain in ebullition 100 g of stem bark in 2 l of water, for 10 mn. Drink 250 ml of decoction, 2 times per day 6 h, for 5 days.

17-Aloe buettneri: Macerate 200 g of leaves, in 2 l of water. Drink deliberately the filtrate controlling the glycemia and the blood pressure.

18-Aloe barteri: Macerate 200 g of leaves, in 2 l of water. Drink deliberately the filtrate controlling the glycemia and the blood pressure.

➢ *19-Spathodea campanulata* : Drink orally 250 ml, 3 times per day, a 1 g herbal tea of stem bark powder per body weight, prepared in 2 l of water

❖ *20-Morinda lucida* : Boil 1,5 g per kg of body weight in 4 l of water, for 30 mn. Drink 250 ml every 6 h.

21-Solanum melongena and *Capsicum frutescens* : Cook fruits of garden egg (*Solanum melongena*) with a little salt or with or without pepper (*Capsicum frutescens*). Sift and drink the filtrate called Medip-me-zon in Ewondo and in Boulou, in the morning instead of coffee tea.

• *22-Holarrhena floribunda* : Boil 4 tablespoons of stem bark powder in 1,5 l of water, for 15 mn. Drink 250 ml of decoction, morning and evening, for 7 days.

23-Funtumia elastica: Boil 150 g of leaves in 2 l of water, for 30 mn. Drink 250 ml of decoction every 6 h.

24-Laportea ovalifolia: Boil 100 g of aerial parts in 6 l of water, for 15 mn. Drink 250 ml of decoction, 3 times per day controlling the glycemia.

• *25-Voacanga africana*: Boil 200 g of bark in 4 l of water. Drink 250 ml of decoction, 3 times per day.

• *26-Picralima nitida*: Eat one seed, 1 time dai-

ly. It is very bitter.

Plants and recipes recorded in Guinean and Soudano-Zambesian savannahs

27-*Vernonia glabra* : Clean and cut 100 g of rhizome, add to that 3 l of water. Maintain in ebullition, for 30 mn. Filter and drink 250 ml of filtrate, 4 times per day.

28-*Brassica oleracea* and *Citrus grandis*: Pound 1 g of leaves of cabbage (*Brassica oleracea*), per kg of body weight and filtrate; add to the filtrate an equal volume of grapefruit juice (*Citrus grandis*.) homogenize and drink the filtrate controlling the glycemia.

➢ 29-*Sclerocarya birrea*: Boil 250 g of stem bark or 100 g of leaves in 4 l water. Drink 250 ml of decoction, 3 times per day.

❖ 30-*Azadirachta indica*: Boil for 40 mn, 50 g of stem bark, 50 g of flower and 50 g of root in 4 l of water. Drink 250 ml of decoction, 2 times per day, for 4 days.

❖ 31-*Albizia lebbek* : Boil for 20 mn, 200 g of root bark, 50 in 4 l of water. Drink 250 ml of filtrate, 2 times per day, for 4 days.

➢ 32-*Bridelia ferruginea*: Infuse for 6 h, 200 g of stem bark, in 4 l of water. Drink 250 ml of filtrate, 3 times per day.

• 33-*Piper capense*: Boil 150 g of fresh leave in 3,5 l of water. Drink 250 ml of decoction, 3 times per day.

Conclusion

In Cameroon three main resorts for treating diseases exist in general and in the particular case of diabetes and/or arterial hypertension the combination of traditional and conventional medicine was the most favorable therapeutic resort (58,89%), following by pure traditional medicine (38,72 %) and pure conventional medicine (2,39%). These main resorts present manifold variances in many social groups including: self herbal medication and consultation of medical doctors (33,08%); traditional healers, self herbal medication and consultation of medical doctors (22,64%); Self herbal medication and consultation of traditional healers (21,75%); Self herbal medication (16,62%); consultation of traditional healers and consultation of medical doctors

(l1,94); Consultation of medical doctor (2,39%). The percentages in brackets correspond to the proportion of interviewees recorded. A marked improvement was registered in 21,50%, of patients using suspected antidiabetic and/or antihypertensive plants. The interviewees who preferred traditional medicine know more available and efficacious medicinal plants. Therefore with their aid 33 plants (6 in coastal dense humid rain forests; 20 in continental dense humid rain forests and 7 in Guinean and Soudano-Zambesian savannahs) which relieve the health condition of some diabetic and/or hypertensive suspected or indirect and confirmed patients were recorded. Their ecological distribution is favorable to their availability in Cameroon. The most important of these plants that include *Azadirachta indica*, *Momordica charantia*, *Phyllanthus amarus, Phyllanthus niruri*, *Laportea ovalifolia*, *Ceiba pentandra*, *Allium cepa*, *Persea americana* and *Catharanthus roseus* relieve the followed up diabetic with hypertension patients. These plants revealed interesting for the potential management of diabetes and hypertension. Meanwhile the recorded plants needed to be detailed investigated for their chemical and pharmacological properties necessary for drugs discovery.

Abbreviations

SHM: Self-herbal medication

SHMTH: Sequential or simultaneous self herbal medication and consultation of traditional healers

CMSM: Conventional medicine (CM) and self-medication (SM) (use of manufactured drugs without medical prescription)

CMDSHM: Consultation of medical doctors and self herbal

medication

SHMSM: Self herbal medication and self-medication

CTHMD: Consultation of traditional healers and consultation of medical doctors

CTHSHMCMD: Consultation of traditional healers, self herbal medication and consultation of medical doctors

SHMSMCMD: self herbal medication, self medication and consultation of medical doctors

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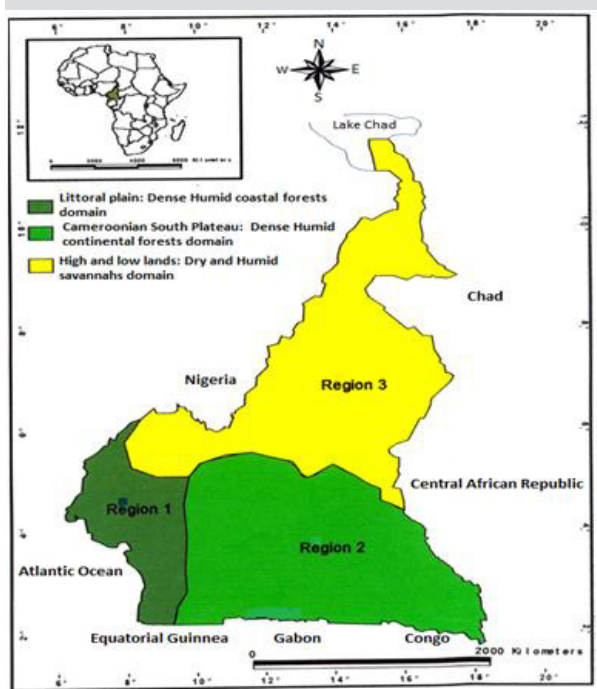
Fig. 1: Principal phytogeographic areas of Cameroon (Tsabang N., 2008)

Table 1: Distribution of interviewees by socio-cultural groups in coastal dense humid rain forests

Socio-cultural groups	Number of interviewees
Abo	5
Anyang	8
Bakoko	13
Bakossi	16
Bakweri	12
Balong	16
Bamileke	25
Bangwa	12
Bassa	31
Batanga	8
Bayangi	18
Douala	16
Ejagham	10
Ewondo	8
Korup	6
Malimba	17
Mbo	31
Bakola Pygmies	5
Nyassa	8
Oroko	19
Europeans and others Africans met	9
Total	**293**

Table 1a : Distribution of suspected or indirect patients and suspected or indirect plants used for their treatment by traditional healers.

Diab : Diabetics. Hyp : Hypertensive patients. Diab-Hyp : Diabetic with Hypertension patients

|	Suspected or indirect patients				Suspect or indirects plants			
	Diab	Hyp	Diab-hyp	Total	Diab	Hyp	diab-hyp	Total
Number	52	28	13	93	13	12	12	37
	% of release patients using plants : 21,50				% of plants with confirmed hypertensive and/or hypoglycemic effects: 52,04			
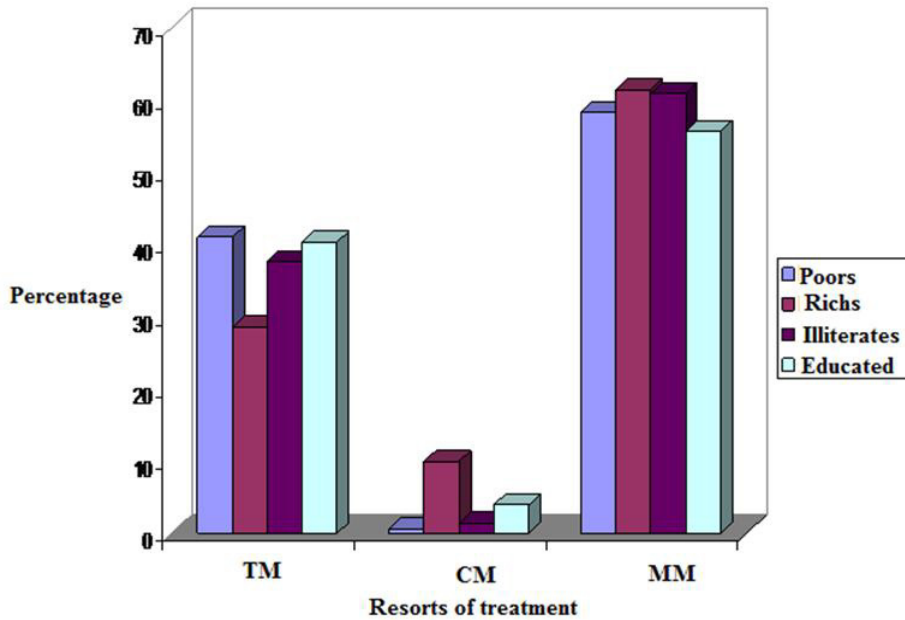
Legend: TM: Traditional medicine; CM: Conventional medicine; MM: Mixed medicine

Fig. 1b: Preferred resorts of treatment' distribution in function of standard of life and academic standard
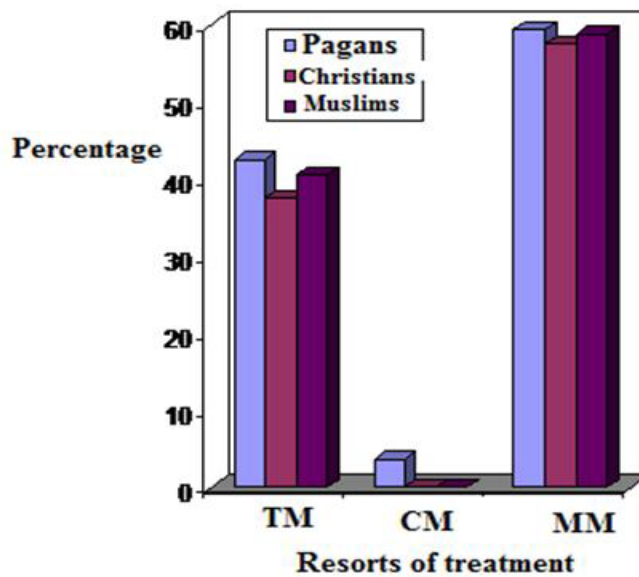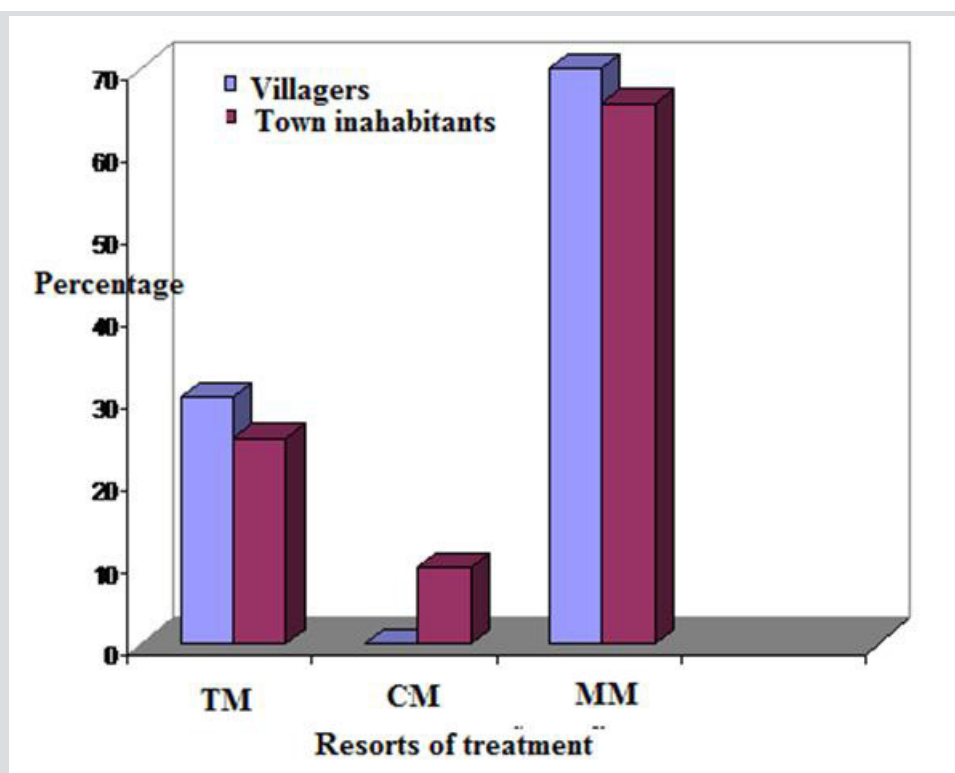

Legend: TM: Traditional medicine; CM: Conventional medicine; MM: Mixed medicine

Fig. 2. Preferred resorts of treatment' distribution in function of religion
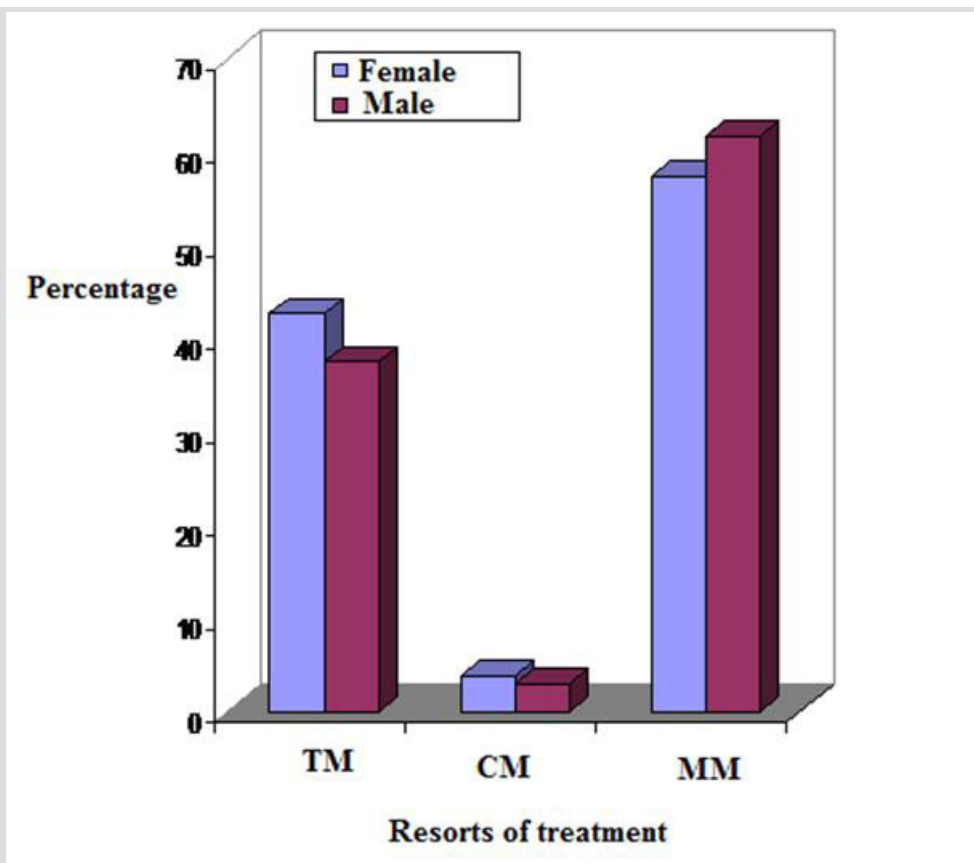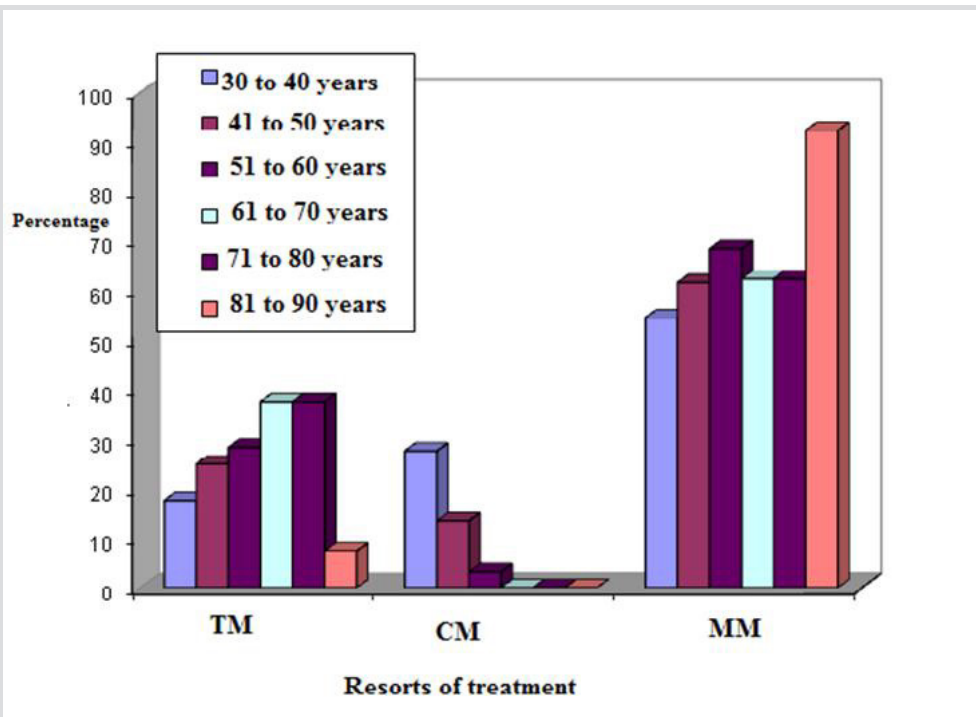
Legend: TM: Traditional medicine; CM: Conventional medicine; MM: Mixed medicine

Fig. 3: Preferred resorts of treatment' distribution in function of sex

Legend: TM: Traditional medicine; CM: Conventional medicine; MM: Mixed medicine

Fig. 4: Preferred resorts of treatment' distribution in function of geographic residence

Legend: TM: Traditional medicine; CM: Conventional medicine; MM: Mixed medicine

Fig. 5: Preferred resorts of treatment' distribution in function of brackets

Legend: TM: Traditional medicine; CM: Conventional medicine; MM: Mixed medicine

Fig. 6: Preferred resorts of treatment' distribution in function of diabetic and/or hypertensive condition

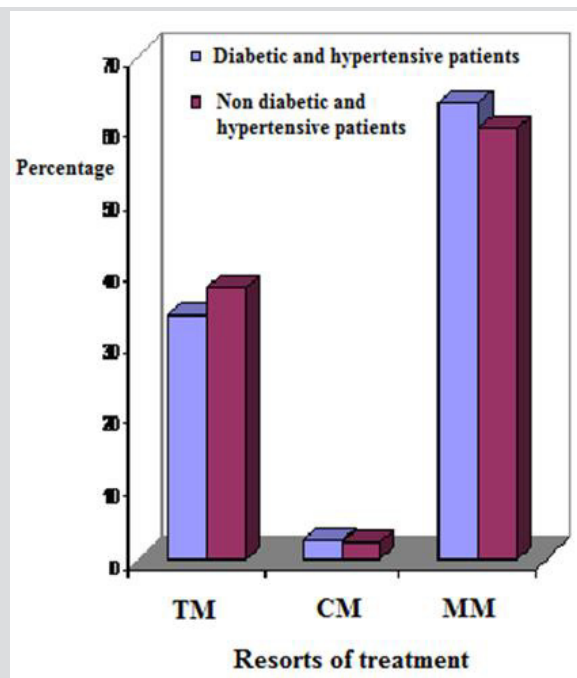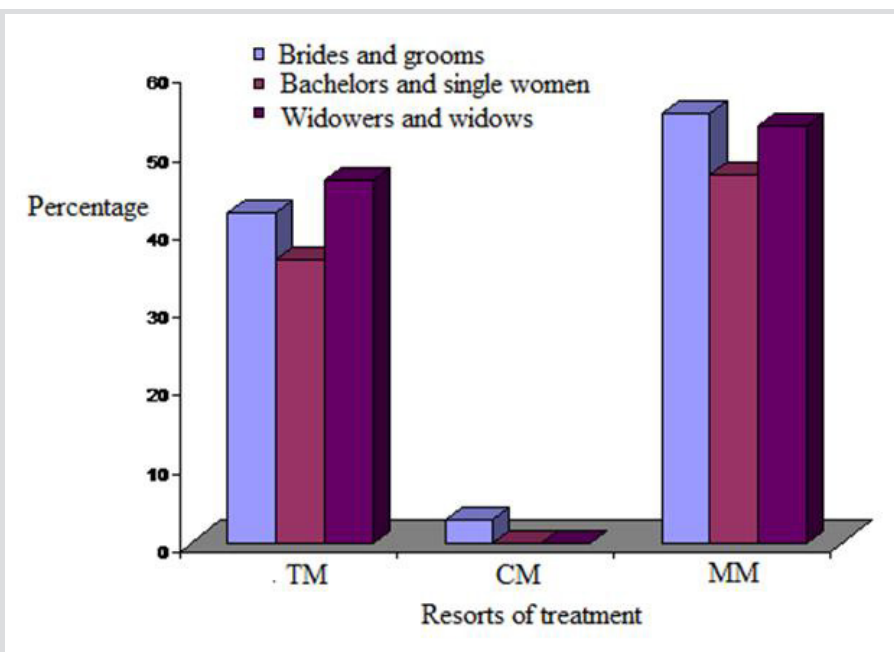Legend: TM: Traditional medicine; CM: Conventional medicine; MM: Mixed medicine

Fig. 7: Preferred resorts of treatment' distribution in function of matrimonial status

Table 2: Distribution of interviewees' socio-cultural groups in continental rain forests of Cameroon

Sociocultural groups	Number of interviewees
Badjoue	11
Bafia	8
Bamileke	34
Bamvele	2
Banen	10
Bassa	16
Baya	8
Bobilis	5
Boulou	26
Ewondo	60
Eton	23
Fang	17
Kaka	6
Makae	7
Mvele	2
Ngouba	8
Baka Pygmies	12
Bakola Pygmies	12
Yambassa	9
Swisszerland (trainee student)	1
Total	**277**

Table 2b: Distribution of diabetics and/or hypertensive patients previously diagnosed in hospitals **NIDD: Non insulinodependent diabetes; IDD: Insulinodependent diabetes; EHT: essential hypertension; SHT: Secondary hypertension.**

Sex and clinical state of Patients	Diabetics		Hypertension Patients		Diabetics with hypertension patients	
	DNID	DID	THE	HTS	DNID-HTS	DNID- THE
Men	47	18	48	24	03	01
Women	28	21	48	37	04	02
Total	75	39	96	61	07	03
Total per type of diseases	85	39	99	68		
Clinical followed up patients patients	70	36	10	56	07	03
Total per type of patients	106		66		10	

Table 3: Distribution of interviewees' socio-cultural groups in soudano-zambezian and guinian savannahs zones

Socio-cultural groups	Number of interviewees
Arabes –choa	1
Bafut	8
Bali	12
Bamileke*	201
Bamoun	18
Baya	37
Bororo	8
Dourou	23
Foulbe	24
Haoussa	17
Kom	82
Kotoko	7
Mafa	2
Massa	5
Matakam	4
Moundang	4
Mbum	10
Mousgoum	2
Nso	40
Tikar	15
Toupouri	7
Fali	3
Widekam	19
Wum	11
Originer of Europ met	1
Total	**561**

Table 4: Interviewees and preferred resorts of treatment

	Traditional medicine resorts			Conventional medicine resorts			Mixed resorts					N I
	SHM	SHMCTH	CTH	CMD	SM	SMCMD	SHMSM	SHMCMD	CTHCMD	SMCTHCMD	SMSHAMCMD	
Number	188	246	04	27			12	374	22	256	02	1131
% per resort	16,62	21,75	0,35	2,39			1,06	33,08	1,94	22,64	0,17	100
% per type of medicine	38,72			2,39			58,89					100

SHM: Self herbal medication; SHM : Self herbal medication and consultation of traditional healers; CTP : Consultation of traditional healers; CMD : Consultation of medical doctor; SM : Self medication; SMCMD: Self medication and consultation of medical doctors: SHMSM: Self herbal medication and Self medication; SMCMD: Self medication and consultation of medical doctors; CTHCMD: Consultation of traditional healers and consultation of medical doctors; Self herbal medication; SHMSM: Self herbal medication, self medication and consultation of medical doctors; NI : Number of interviewees.