WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 4, Issue 12, 377-392. Research Article ISSN 2277– 7105

ETHNO-MEDICO-BOTANY, THEORY AND PHILOSOPHY: CASE OF TRADITIONAL MEDICINAL PLANT USES IN HEMIPLEGIA AND NEURALGIA, IN BUI DIVISION, NORTH WEST REGION OF CAMEROON

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Article Received on
09 Oct 2015,

Revised on 30 Oct 2015,
Accepted on 19 Nov 2015

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ABSTRACT

A study of how medicinal plants are used by traditional healers and herbalists to treat hemiplegia and neuralgia was carried out in Bui Division of the North West Region of Cameroon. Two field works were conducted in December 2009 and January 2010 and in December 2010 and January 2011, according to the theory "perceive a disease condition as a solution to the problem of continuity of metabolism so as to decipher the problem necessitating the disease condition and seek ways to restore health". Two target populations of traditional healers and herbalists on the one hand and hemiplegic/neuralgic patients on the other hand, were interviewed. From the results, twenty-four (24) plant species belonging to seventeen (17) families were used by forty (40) traditional healers and herbalists to produce fifteen (15) therapeutic preparations consisting mostly of a concoction from plant leaves, roots, barks and stems. Most treatments involved drinking extracts from plant species with frequency of consumption and duration depended on a combination of factors. Treatment was frequently accompanied by physiotherapy, physical exercises and psychotherapy. At least 40% patients were treated by phytotherapy, with the health of many others improved. It was reported that phytotherapy showed greater efficiency than those obtained from conventional medicine. The anti-hemiplegic and anti-neuralgic properties of several plants harvested during the study were evaluated. The treatment of one disease in phytotherapy may lead to the treatment of several diseases with similar symptoms. It is recommended that further studies be carried out to examine these findings.

KEYWORDS: Phytotherapy, Hemiplegia, Neuralgia, Traditional healers, Bui Division, Cameroon.

1. INTRODUCTION

Every activity of the body is coordinated and kept under control by an enormous and complex cellular network of nerve fibres and sensory endings. All the commands elaborated by the central nervous system, are organized inside the complex brain structures. A failure or injury to one of these nerve fibres may lead to pain in the area of the skin resulting in a nervous disease called neuralgia.

There are two types of neuralgia: Central neuralgia and peripheral neuralgia.[1] Meanwhile the inability to move all or part of the body due to illness, injury, breaking of blood vessel in the brain or some nervous disorder produce a paralysis called hemiplegia. There are several types of hemiplegia which include: capsular, cerebral, facial, spastic and spinal hemiplegia.[1,2] On the other hand, Benign explains that when the meninges are inflamed this causes meningitis, the brain and part of the body is paralyzed and sometimes the patients are mentally unbalanced for a long time.[3] Meningitis is very common in Bui division (personal communication from a Medical doctor). Traditional healers or herbalists do not have a particular name for this illness. Symptoms of nervous problems including anxiety, insomnia and depression, as described by traditional healers and herbalists are found to be the same symptoms described by scientists.[4] Some plant species in the USA as homoeopathist St John's wort (*Hypericum perforatum*, Hypericaceae) have proved to be helpful when taken regularly for mild to moderate depression.[5, 6] In the study area, despite the presence of good and well equipped private and public hospitals, hemiplegia and neuralgia patients still prefer to go to traditional healers, the main reason blamed on their low income since hospital costs of managing the conditions are high.

This study sets out to answer the question Is it possible to find plant species like St John's wort for the relief of both mental and physical pain, that could be a true boon for the population of the study area? This research is therefore focused on how these nervous diseases and paralyses are traditionally treated in the study area by the use of medicinal plants.

The aim of this study therefore was to develop an inventory of the plants used and to document the recipes as done in the Bui division, to treat hemiplegia and neuralgia. It was

also involved with inquiring into the efficiency of these plants in the treatment of the diseases, by interviewing the patients treated or ongoing treatment.

Study Area

Bui division in the North West Region of Cameroon is made up of six sub-Divisions: Jakiri, Kumbo, Mbven, Nkum, Noni and Oku (Fig. 1). Bui division is located on the Bamenda highlands with many hills, the Oku Mountain with a Crater Lake, many V-shaped valleys and very few lowland areas. The landscape is a grassfield. Because of agricultural activities and settlement, most of the forest has been destroyed but natural forest reserves, for instance, the Kilum Mountain forest in Oku, the Kovifem forest and Mbonso forest still exist. The Eucalyptus introduced from Australia form the woody formation at the summits of many hills.

The population of Bui division is estimated to be about 322 877 inhabitants representing about 16.66% of the regional population.[7] This population is made up of several sub-tribes. They still maintain their tribal solidarities, with their own dialects, food, habits, socio-religious taboos, believes and faiths.

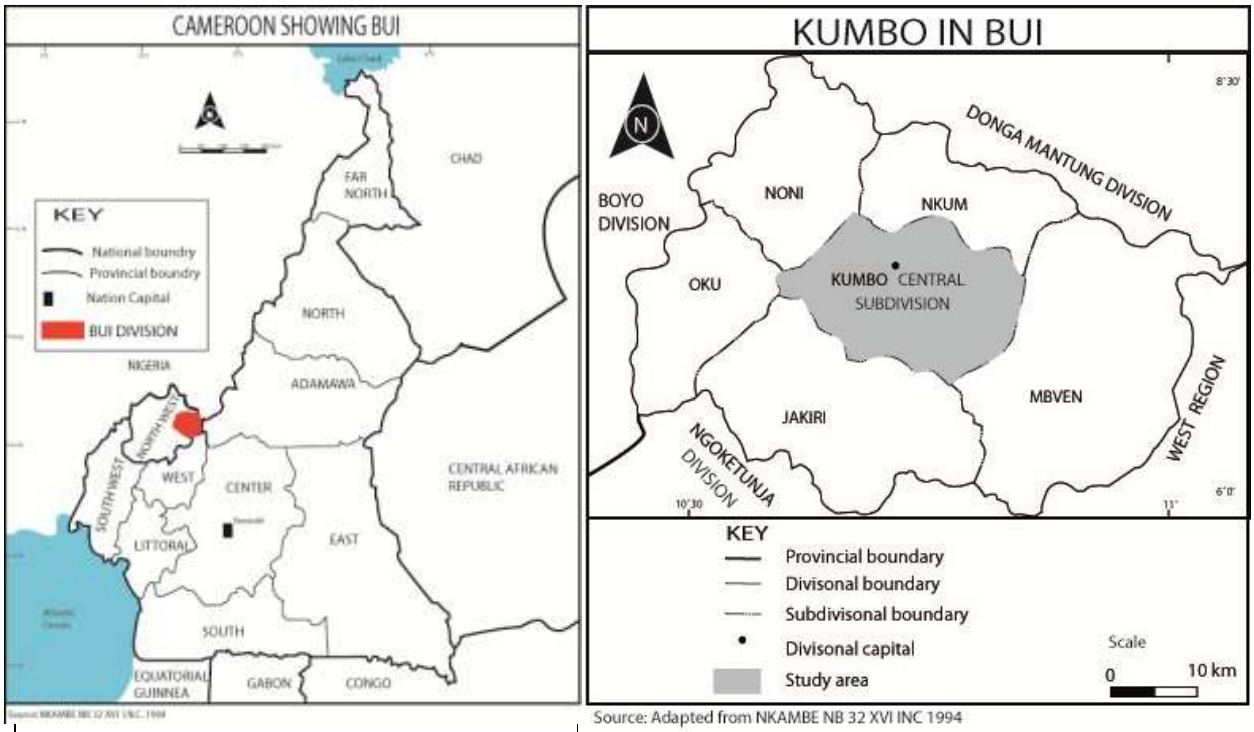

Fig. 1. Bui division in Cameroon and place of Kumbo subdivision in Bui.

The Climate is equatorial with 2 seasons; the dry season goes from mid November to mid March. The annual average of temperature and rainfall are 24.95°C and 2512.7mm respectively (Fig. 2).

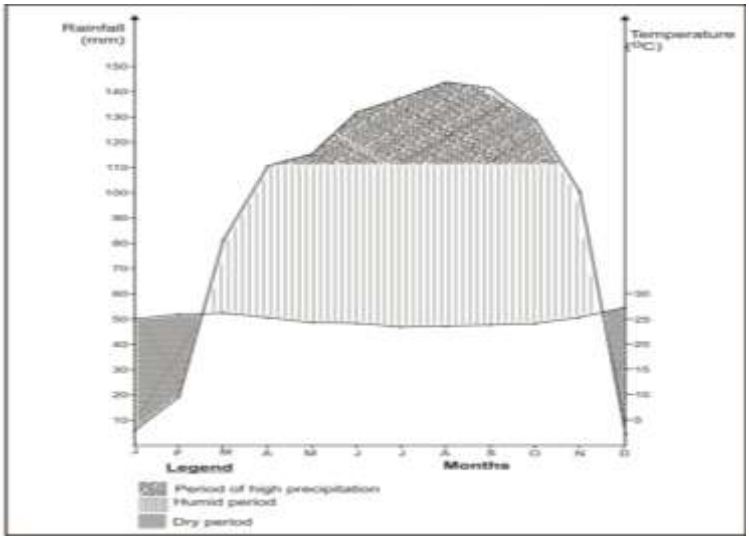

Fig. 2. Ombrothermic diagram of Bui Division (2000 – 2010).

(*Source: Divisional delegation of Agriculture at Kumbo*).

2. METHODOLOGY

The morbidity of *Hemiplegia/neuralgia* was obtained at the St Elizabeth's Catholic hospital Shisong of Kumbo town. Two questionnaires were elaborated for two target populations: the traditional healers and the patients, former or new.

The questionnaires to the traditional healers sought to know how they made diagnosis of *Hemiplegia/neuralgia*, the plant and the recipes used as therapeutic preparation to treat the diseases, the mode of preparation of the remedy and the method of administration, the number of patients already treated or whose conditions have improved. This questionnaire also found out how the recipes could be preserved and duration of treatment.

The questionnaire to the patients was used to find out the origin of their diseases and whether the patients had first been to the hospital, their situation before seeking traditional treatment, (during and after) treatment, the reason for patients' decision to try phytotherapy. We also found out how the patients used the recipes given to them by the therapists.

The informants who accepted to collaborate in the study filled the form or we did it throughout a conversation. In this case no direct question was asked in order to prevent

biasing the answers and compromising spontaneity. Everything that comes out during the interview was subsequently transferred to the structural form. We followed the criteria outlined by Hedberg) and Waller in conducting all the interviews.[8,9] Recipes cited in at least two different places by 2 informants were retained for this study.

Pictures of different plant species were made using a digital camera, the plants collected dried and identified following earlier works.[10,11,12] Comparison of our species with those of the Cameroon National Herbarium (YA) (Ministry of Agriculture) led to confirmation of their identities. During the field work the first problem was at the level of getting information from informants. A majority of them demanded gifts in exchange for information, while others completely refused and gave mystical reasons. And lastly, some plant species were named differently by different traditional healers. This brought confusion and made identification of plant species difficult.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Hemiplegia/neuralgia morbidity at the St Elizabeth's Catholic hospital Shisong (2005-2010)

This is obtained from the register of the hospital and presented in Table 1. A total of 138 patients were recorded for three cases of nervous illnesses, quoted 183 times; either an average of 1.32 quote by patient. Hemiplegia is the most frequent (69.9%), consistent with neuralgia (25.6%) and paralysis (4.37%). The reasons are variable and only the sharp antecedents of the illness for every patient is noted (Table 2). The data of Table 1 re-evaluated gave a total of 461 causes recorded with an average of 3.34 antecedents by patient: diabetes, 122 cases on 461 registered reasons (26.4%) is the most frequent, followed by blood pressure (BP), 21%; depression, HIV and stress, 15.1%; others, 2.1%; gastritis and hypertension, 1.3%; injections, 1%; accident, 0.6%; and nerve failure, 0.4%. Hemiplegia and neuralgia being illnesses with a highly variable expression, diabetes Type 2 (diabetes mellitus), can lead to transient hemiplegia. This can be treated through phytotherapy by continuous drinking of extracts from bitter leaves (*Venonia amygdalina*), by the diabetic patient.[6]

Table 1. Hemiplegia/neuralgia morbidity at the St Elizabeth's Catholic hospital Shisong, (2005 to 2010). ***BP = Blood pressure; HIV = Human Immunodeficiency Virus.***

Patients			
Age range	**Number**	**Diseases**	**Causes (antecedents)**
0-5	0		-
5-10	2	Neuralgia	nerve failure
10-15	3	Paralysis	Accident
15-20	5	Paralysis	Injections
20-25	6	Hemiplegia	gastritis, hypertension
25-30	7	Hemiplegia	Bp, diabetes
30-35	10	Hemiplegia	diabetes, HIV
35-40	15	Hemiplegia	diabetes, HIV
40-45	20	Hemiplegia	diabetes, HIV, BP
45-50	25	Hemiplegia	diabetes, HIV, BP, stress, depression
50-55	20	hemiplegia/neuralgia	diabetes, BP, stress, depression
55-60	15	hemiplegia/neuralgia	diabetes, BP, stress, depression
60-65+	10	hemiplegia/neuralgia	diabetes, BP, stress, depression, others
Total patients:	138		

3.1.2. Plants species and recipes

The plants used in the treatment of hemiplegia/neuralgia in Bui *Division* are presented in an alphabetic order according to their families. Species of each family are presented in an alphabetical order according to their genera. Twenty-six plant species belonging to 26 genera and 18 families were collected during the field trips. *Asteraceae* and *Acanthaceae* were the most represented families with 8 and 2 species, respectively (Table 2).

Table 2. Plant species with anti- hemiplegia and anti-neuralgia properties and their families.

Plant's number and % according to 199 citations	Families	Scientific Name	199 Citations re-evaluated from recipes	Local name and common names
1 (14.5)	Acanthaceae	*Eremomastax speciosa* (Hochst.) Cufod.	29	Ntamir
2 (2.5)	Acanthaceae	*Justicia hypocrateriformis* Vahl.	5	kifu ke menseh
3 (8.5)	Amaryllidaceae	*Crinum jagus* L.	17	nkeng
4 (5.0)	Anacardiaceae	*Lannea kerstingii*.Hochst.	10	kibunchum
5 (1.0)	Ancystrocladaceae	*Ancystrocladus korupiensis*	2	Fuh korop
6 (3.0)	Apiaceae	*Centella asiatica* L.	6	Indian pennywort
7 (2.0)	Apiaceae	*Hydrocotyle bonariensis* Lam. Benth.	4	lookingah
8 (3.0)	Asreraceae	*Aspilia Africana* (Pers.) C. D. Adams	6	eyelga dzie1

9 (5.5)	Asteraceae	*Acmella caulirhiza* Delile	11	shishursheshiv
10 (5.0)	Asteraceae	*Bidens Pilosa* L	19	black jack (eng)
11 (1.0)	Asteraceae	*Dichrocephala integrifolia* L.	2	shijiyshe ngang
12 (2.0)	Asteraceae	*Emilia coccinea*.(Sims) G. Don	4	**alo mvu**
13 (2.0)	Asteraceae	*Erigeron floribundus* C. D. Adams	4	gobu
14 (2.0)	Asteraceae	*Galinsoga ciliata*.L.	4	shijiy
15 (1.0)	Asteraceae	*Taraxacum officinale* Wigg.	2	vinwan, dandelion (eng),
16 (6.0)	Bignoniaceae	*Kigelia africana (*Lam) Benth.	12	kinseey ke kichi sausage tree
17 (1.0)	Caricaceae	*Carica papaya* L.	2	popo
18 (1.0)	Cyperaceae	*Eleocharis* sp.	2	fuh-nuh
19 (2.5)	Euphorbiaceae	*Ricinus communis* L.	5	shinjang, castor plant (eng)
20 (2.5)	Fabaceae	*Desmodium intortum*.(Mill.)	5	kinkoobveeh
21 (6.0)	Iridaceae	*Gladiolus gregarius* Welw. ex Bak.	12	ntoeboon, sword lily (eng)
22 (1.0)	Lamiaceae	*Leonotis nepetifolia* var. *africana* (P. Beauv.) J. K. Morton	2	kighav
23 (4.0)	Lauraceae	*Persia americana* Mill.	8	pia
24 (1.0)	Mimosaceae	*Mimosa pudica*.L.	2	banin
25 (2.0)	Polygonaceae	*Polygonum nepalense* Meisn.	4	kintotong
26 (2.5)	Rosaceae	*Prunus africana* (Hook.f.) Benth.	5	kirah
27 (1.0)	Verbenaceae	*Cleroderdrum speciosum*. Dombrain	2	nfusai, bleeding heart
28 (6.5)	Vitaceae	*Cissus rotundifolia* (Forssk.) Vahl	13	kinseey ké nsai

The plant species encountered are used for 18 therapeutic preparations organized in three tendencies for curing one or two diseases (Table 3). Only 2 recipes are monospecific, whether they are associated or not to the non-plants ingredients; it is the case of a preparation with *Erygeron floribundus*. Two recipes are made of 4 and 1 of 5 plant ingredients. The ample phytotherapeutic knowledge of the treatment of hemiplegia/neuralgia is shown by the high value of the average of ingredients in therapeutic preparations (2.6). It should be underlined that several plant species are used in many preparations against those chronic diseases. Following the average of the preparations per plant (0.7) and the average of plants per recipe (1.4), this result indicates a substantial exploitation of the plant resources.

Table 3. Data on the anti-hemiplegia/neuralgia recipes of Bui Division.

Recipes number (quotations)	Plant species : plant part used	Mode of use
Total recipes = 19 Total patients = 25 Total quotations = 74 Total quotations/patient = 2.9	Total plant species = 28 Total quotations of plant species in all recipes = 52 Total of plant quotations /recipes = 1.85	- Total of medicinal preparations = 19 - Average of recipes per plant (AMP) = 19/28 = 0.67 - Main preparation: methods: decoctions, 0.9. - Main administration forms of preparations: orally, 0.9
Neuralgia		
1 (6)	*Centella asiatica*: whole plants powdered	1 table spoonful of powder swallowed with water twice a day
2 (4)	*Erigeron floribundus*: 1 hanful of fresh leaves ground into paste **Honey: 250mL **Hä or Local rhum: 125mL	The ingredients are mixed and eaten: 1 teaspoonful twice a day Characterization: recipe efficient for occipital neuralgia
3 (5)	*Bidens pilosa*: 250g of Leaves *Lannea kerstingii*: 250g of leaves	The ingredients are boiled in 3L of water for 10-15min and the cooled solution drunk: 125mL twice a day.
4 (2)	*Emilia coccinea*: 300g of Leafy stems *Polygonium nepalense*: 500g of leaves, stems and roots	The ingredients are boiled in 5L of water for 10–15L min and the cooled solution drunk: 250mL twice a day
5 (7)	*Eremomastax speciosa*: 500g (leaves) and 200g (roots) *Kigelia africana*: 500g (fruits), 300g (stem bark), 200g (roots)	The ingredients are boiled in 6L of water for 45 min and the cooled mixture drunk: 125mL twice a day
6 (2)	*Leonotis nepetifolia* var. *africana* : 250g of Leaves *Taraxacum officinale.*: 250g of Leaves	The ingredients are boiled in 3L of water for 10-15min and the cooled solution drunk: 125mL twice a day
Hemiplegia, paralysis		
7 (6)	*Apilia Africana*: 500g of leafy stems *Persea americana* : 200g of leaves	The leaves are boiled in 4L of water for 15 min and the cooled solution drunk: 250mL twice a day
8 (2)	*Carica papaya:* 500g of leaves. *Persia Americana:* 500g of leaves	The leaves are boiled in 5L of water for 20 min and the cooled solution drunk: 250mL thrice a day
9 (6)	*Cissus rotundifolia*: 200g of roots *Eremomastax speciosa:* 300g of leafy stems *Gladiolus gregarious:* 200g of roots	The ingredients are boiled for 15 min in 5L of water and the cooled solution drunk: 250mL thrice a day
10 (3)	*Crinum jagus:* 200g of roots *Kigelia Africana:* 300g of stem bark. *Prunus Africana:* 300g of stem bark.	The plant parts are boiled in 6L of water for 15mins and the cooled liquid drunk: 250mL once a day
11 (4)	*Bidens pilosa:* 200g.of leaves *Galinsoga ciliata:* 250g of leaves *Hydrocotyle bonariensis:* 250g of leaves	The leaves are boiled in 5L of water for 15 min and the cooled liquid drunk: 150mL thrice a day
12 (2)	*Clerodendrum speciosum:* 300g of leaves *Dichrocephala integrifolia:* 300g of leaves	The f plant parts are oiled in 5L of water for 15 min and the cooled solution

	Prunus Africana: 500g.of stem bark	drunk: 250mL twice a day
13 (6)	*Acmella caulirhiza*: 200g of leaves *Crinum jagus* L.*:* 200g of eaves *Eremomastax speciosa*: 200g of leaves *Gladiolus gregarius:* 200g leaves and 50g bulb	The ingredients are boiled in 5L of water for 15 min and the cooled decoction drunk: 125 mL thrice a day
14 (3)	*Bidens pilosa:* 300g of leaves *Crinum jagus*: 300g of leaves *Eremomastax Speciosa:* 300g of leaves *Justicia hypocrateriformis:* 300g of leaves	The leaves are boiled in 5L of water for 15 min and the cooled decoction drunk: 250mL twice a day
15 (5)	*Acmella caulirhiza:* 150g of leaves *Desmodium intortum:* 200g of leaves and roots *Eremomastax speciosa:* 200g of leaves *Lannea kerstingü:* 150g of leaves *Ricinus communis:* 200g of leaves	The plant parts are boiled in 6L of water for 15 min and the cooled solution drunk: 125mL thrice a day
Hemiplegia and neuralgia		
16 (2)	*Ancystracladus korupiensis:* 500g of Leaves and roots *Bidens pilosa:* 300g od leaves	The ingredients are boiled in 5L of water for 15min and the cooled decoction drunk: 125mL thrice a day
17 (5)	*Bidens pilosa:* 300g of leaves *Cissus rotundifolia:* 500g of roots *Crinum jagus:* 200g of leaves	The ingredients are boiled in 6L of water for 15min and the cooled solution drunk: 125mL thrice a day
18 (2)	*Eleocharis* sp.*:* 200g of d roots *Eremomastax speciosa:* 400g of leafy stems *Justicia hypocrateriformis:* 300g of leaves	The ingredients are boiled in 5L of water for 15 min and the cooled decoction drunk: 125mL thrice a day
19 (2)	*Kigelia Africana:* 500g of fruits *Cissus rotundifolia:* 300g of roots *Mimosa pudica:* 200g of leaves	The ingredients are boiled in 5L of water for 15 min and the cooled solution drunk: 250mL twice a day

3.1.3. Traditional healer's service

Forty traditional healers (28 men and 12 women) accepted to cooperate in the survey. With their help we met 25 (10 men and 15 women) former and new hemiplegia/neuralgia patients in the Division. They all had been to the hospital at the beginning of the disease. The data gathered from these patients is presented in Table 4.

Table 4. Pattern analysis of twenty-five patients (R = Recipe).

Patients N^{o}	Age	Recipes used	Diseases	Duration of treatment	Results
1	50	R1; R3; R4	Neuralgia	4 months	Treated completely
2	48	R12; R13; R14	Hemiplegia	3 months	Improving
3	45	R10; R11; R7	Hemiplegia	6 months	Treated completely
4	60	R9; R4	Hemiplegia	12 months	Treated completely
5	40	R13; R3	Neuralgia	6 months	Improving
6	52	R5;R4	Hemiplegia	6 months	Improving
7	53	R15;R5	Hemiplegia	3 months	Improving
8	65	R4;R7	Hemiplegia	6 months	Treated completely
9	42	R13; R3	Neuralgia	4 weeks	Improving
10	37	R8	Hemiplegia	3 months	Improving

11	70	R10; R6	Hemiplegia	10 months	Improving
12	50	R9;R12;R6	Hemiplegia	10 months	Treated completely
13	45	R9; R4	Hemiplegia	6 months	Treated completely
14	40	R2; R3	Neuralgia	6 weeks	Improving
15	67	R13; R3	Neuralgia	14 months	Improving
16	59	R15; R13; R7	Hemiplegia	12 months	Treated completely
17	35	R9; R10	Hemiplegia	5 months	Improving
18	55	R9; R12	Hemiplegia	6 months	Improving
19	32	R4; R12; R11	Hemiplegia	3 months	Improving
20	48	R7; R9	Hemiplegia	4 months	Improving
21	38	R1; R3; R13	Neuralgia	6 months	Treated completely
22	70	R1; R13	Neuralgia	9 months	Improving
23	74	R12; R9	Hemiplegia	10 months	Improving
24	51	R9; R4; R11	Hemiplegia	8 months	Treated completely
25	71	R1; R3	Neuralgia	7 months	Improving
26	54	R7	Neuralgia	3 months	Treated completely
27	62	R1	Neuralgia	3 months	Treated completely

3.1.4. Duration of treatment of healed patients

From Table 4, column 6, 11 patients out of 27 (40.7%) were healed, that is, they did not show any *hemiplegia/neuralgia* symptoms within at least 1 year. All the healed patients had made between 1-3 years without showing an *hemiplegia/neuralgia attack.* The treatment of the 11 healed patients, re-evaluated gives the values recorded in table 5. This is given in 3 columns representing the duration in months (X), the medium month points (m) and the number of patients (f); 5 lines of treatment multiplied by interval of 2 months. ‘’n” represent the total number of patients who got well.

The average duration (X) of treatment is:

$X = 1/n \Sigma fm = 1/11[(3 \times 3.5) + (4 \times 5.5) + (1 \times 7.5) + 1 \times 9.5) + (2 \times 11.5)] = 6.59$ months with a standard deviation $\sigma = 2.1$ months.

Table 5. Duration of treatment.

Number of months (X)	Medium point (m)	Number of healed patients (f)
3-4	3.5	3
5-6	5.5	4
7-8	7.5	1
9-10	9.5	1
11-12	11.5	2
N		11

3.1.5. Important plants and recipes

In Table 3 (column 2), there are therapeutic preparations that may have successfully treated hemiplegia/neuralgia patients. The net result is the drop in frequency of crisis registered for 11 patients out of 16 (40.7%). They used 19 recipes as in Table 4 column 3, with an average of 2.36 recipes per patient. The most used recipes are R9 (8 patients); R3, R4 and R13 (7 patients respectively); R1, R7 and R13 (5 patients respectively). The most used plants are *Eremomastax speciosa* (Fig. 3) in 5 preparations, *Crinum jagus* (Fig. 4), in 4 preparations.

Fig. 3. *Eremomastax speciosa.* Leafy plant. Superior side of the limb green, lower side crimson.

Fig. 4. *Crinum jagus.* Bulb and leaves.

3.2. DISCUSSION

This study is based on an axiom: physical pain (disease) translates a solution of continuity of metabolism. The theory is**:** perceive physical pain (disease) as a solution to continuity of

metabolism and search for ways to restore health". What can the illness possibly be and how can it be treated? The philosophy developed from this was the construction of discursive knowledge from the opinion of the community investigated. The application is ethno-medico-botany, with "social learning'' as explanatory theory.

As a result of an effort to document the traditional medicinal uses of plants among tribes (Nso, Oku, Nkor and Djotin) residing in Bui division of North-West region of Cameroon, 60 herbaria specimens were recorded. The same plant could have 3 to 4 local names. The identification of these plants have given 24 species grouped into 17 different families used for the treatment of hemiplegia/neuralgia. Some of these records, particularly those concerning *polygonum nepalense* (Fig. 5) and *hydocotyle bonariensis* (Fig. 6), are new to the literature of Cameroonian medicinal plant.[13,14]

Likewise the benefits concerning some species are similar to the uses recorded in other Cameroonian area: *Ricinus communis, Dichrocephala integrifolia, Prunus African, Eremomastax speciosa*.[13,14,15] In Nyirum: *Clerodendron speciosum, Persia Americana*.[16] *Bidens pilosa* and *Acmella caulirhiza*[17] and in Michigan (North America): *Emilia coccinea, Galinsoga ciliata* and *Taraxacum officinale*.[18]

The fact that these plants are found to have same uses in different places, giving the same results, is testimony to their effectiveness in the treatment of hemiplegia/neuralgia symptoms.

Fig. 5. *Polygonum nepalense.* Flowering plants.

Fig. 6. *Hydrocotyle bonariensis* with circular and peltate leaves (i.e. stalk attached to the middle of the leaf.

Laboratory analysis showed some of the plants having substances with anti-hemiplegic and anti-neuralgic effects. For example, *Centella asiatica* contains asiaticoside consisting of 3 sugars (2 glucose + 1 rhamnose teichoic acid). This last acts on the connective tissue in the biosynthesis of collagen. It has healing and eutrophic properties of the connective tissue.[19] These properties of the *Centella asiatica* extracts serve as good remedies in the treatment of ulcers as well as the treatment of hemiplegia/neuralgia. The use of this plant species in Bui Division possibly indicates authenticity of its usefulness in other diseases: healing of leg ulcers,[20] gastric ulcers recovery,[21] regression of the lesions produced by schistosomiasis.[22] We got satisfactory results with the extracts of *Centella asiatica* in the treatment of the varicose veins, varicocele due to orchidoptosis, clearing of the thoracic aorta and glaucoma due to trabecula subsidence.[23]

Aspilia africana extract caused varying degrees of cellular proliferation and epithelia regeneration and have good potentials for use in peptic ulcer disease and further provide a rationale for the use of the leaves of this plant in ulcer management by alternative medical practitioners and rural dwellers.[24]

Some of the reported recipes, liable to produce untoward side effects should be made and used under the direction of the traditional healers who can judge the opportunity of using it. For example: *Persia Americana* is used for abortion in the Sangmelima region (South Cameroon).[25] *Polygonum nepalense* is also used as an abortificient and diuretic.[26] Honey has an abortificient property through the dilation of the uterine collar, capable of leading to an

abortion. So recipes including these are contra-indicated in pregnancy in traditional pharmacopoeia.

5. Conclusion and recommendation

The traditional healers of Bui Division treated at least 40% patients of hemiplegia/neuralgia, using 19 recipes, combined or not, made from 28 plants. The most widely used plants are Eremomastax *speciosa* and *Crinum jagus* The result corroborates the findings of previous researchers in this field. The activity experienced at school by the teacher is fundamentally an activity of communication soliciting essentially the natural faculty to reason, whatever the discipline. The discussion of this survey shows rational sequences of a deductive logic about the efficiency or the anti-hemiplegic and anti-neuralgic properties of plant species used in this study. It is one of the ultimate goals of the school: teaching reasoning. It is recommended that further studies be carried out to examine these findings.

ACKNOWLEDGEMENT

The author is grateful to Francis Lafon for his enormous and relentless effort from the beginning to the end in the realization of this work; to the head of St Elizabeth's Catholic hospital Shisong, Bui Division, specially to Mbuh Marie Chantal Wirba for her participation in the field trips within the context of the requirement for the award of a post-graduate diploma (DIPES II) in Biology at the Higher Teacher Training College of the University of Yaoundé I; Nditafon George Ngeh for proof reading and editing the work and to all the healers and patients who co-operated in the survey.

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