# Ethnopharmacological Surveys' Methodologies for Medicinal Plants uses Discovery and Environmental Threatens on Recorded Plants from Indigenous Knowledge in Cameroon

Nole Tsabang[1], Nole Tsabang[2], Armel Tedjou Nouboudem[3], Denis Sonwa[4] and Alain Bertrand Dongmo[5]

[1] Institute of Medical Research and Medicinal Plants Studies

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## Abstract

Nowadays, more than 80

***Index terms***— usual, potential, convinced, suspected and threaten medicinal plants.

rom empirical uses of plants and animals, ethnopharmacological studies have brought to humanity more than 60 % of daily drugs. As a multidisciplinary science, ethnopharmacology has developed original methodologies that combine tradition and modernity and open promising perspectives. The usual medicinal plants are species known by the traditional healers for the treatment of the diseases. The species which successfully treat or relieve a patient are convinced medicinal plants. Meanwhile, some medicinal plants and the environmental threatens that they undergo, are still misunderstood. Traditional healers, especially those of hinterland (Boro or Fulani and Pygmies) do not recognize modern medical terminologies of several diseases. This reason render difficult to carry out an ethnopharmacological survey particularly at sedentary Pygmies of East and South regions of Cameroon, Fulani in mountains and some illiterate old traditional healers. In traditional medicine, the diagnostic is not outright. Nevertheless, traditional healers treat certain pathologies. These treatments are mostly dependent on the experience of the indigenous people who indirectly treat the diseases based on their signs, their symptoms and/or their complications. According to the theory of likeness or aphorisms of positive medicine, some medicinal plants are adopted to the treatment of a specific disease by exploiting the similarity between the form and the color of the plant organs and the patient's color of the eyes and/or of the skin, due to this disease. The interpretation of the diseases' names, of the plants' names, of the plant habitats' names, of the behavior of the animals after consuming a given plant and of the mystic activities, the myths, the histories and the incantations, can permit to identify medicinal uses of plants. In these cases, the species identified are suspected medicinal plants.

More than 200 000 plants species on 300 000 recorded in the world live in tropical countries of America, Africa and Asia. Cameroon, a country of the Congo basin, counts about 10 000 plants species and F only 800 medicinal plants are known (1). The medicinal plants constitute a natural heritage of a great importance for its population health. Since antiquity, man mainly uses plants for his health problems. The exigencies of resistant to be synthetized or resistant to the synthesis like vincristine and vinblastine, the phenomena of microbes' resistance to usual antibiotics and the persistence of incurable diseases reinforce the resort to traditional medicine.

The general objective of the present work was to exploit the strong experience, developed since the antiquity on medicinal plants uses in Cameroon, for their future valorization by the scientific community.

## 1 a) Detailed botanical prospection and ethnopharmacological thorough preparation

The survey was conducted nearby 1131 informants from 58 tribes of Cameroon, in a random distribution. Folklore medicinal information on medicinal plants used in the symptomatic treatments of diseases and environmental threatens on the species, were recorded during interviews and discussions, following a semi-structured ethnopharmacological detailed methodology developed in Tsabang N. et all. 2015 (2). Samples

of recorded plants were collected, dried, identified and confirmed at National Herbarium of Cameroon, and conserved in the Institute of Medical Research and Medicinal Plants Studies. In addition, data for environmental conditions in which lives the recorded species were also collected.

# 2 i. Distribution of interviewers

The 1131 informants 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

# 3 II. Results

# 4 a) Identification of some diseases treated based on their signs, symptoms and complications

Hepatitis, typhoid, appendicitis, etc. are classified in abdominal diseases. Sickle cell anemia, malaria, typhoid fever, etc., are often confounded in traditional medicine. Diabetes and arterial hypertension are unknown in the hinterland. The cancer, gangrenes, elephantiasis, scrotum, etc., were mystified, regarding their extraordinary complications. Table 1 presents the correspondence between signs, symptoms and complications of suspected diseases, described by a physician; some of these manifestations are treated with suspected medicinal plants. Many of these diseases that include malaria, typhoid fever, sickle cell anemia, hepatitis, have common symptoms which render difficult the application of their symptoms for their diagnostic. Therefore traditional healers can easily confound them. But the strong frequencies of these signs, symptoms and complications in the management of certain pathologies sustain their indirect treatment by traditional healers. The recorded suspected plants must be used to treat at least three of these manifestations. The recorded potential medicinal plants, in addition to treat at least three manifestations of diseases, possess isolated actives ingredients and/or extracts.

# 5 b) Similarities of colors and forms

Due to the yellow color of Anacardium occidentale fruits, 33 informants with age between 80 and 90 used them to treat jaundice; the reddish color of tubers and petioles of Betavulgaris make this species used by 54 housewives against anemia and the treatment was also known by 10 riches; the twin fruits of Voacanga africana because of it similarity in form with the testicles, are used by 39 villagers and 66 citizens to treat the testicular edema; Schumanniophyton magnificum because of its names in Ewondo, that means somebody's blood defender, this plant was adopted for malaria treatment. This information was collected nearby 378 informants. The form of snack of Entada gigas' stem makes the linkage that was in the origin of its seeds use to prevent and to cure snack bites. This information was given by 16 Pygmies; According to 71 informants, the fruits consumption of Momordica charantia by certain pregnant mammals has oriented early people to use them for delivering; For 677 informants, the red color of the decoction of many species that include Eremomastax speciose, Hibiscus sabdariffa and Hypoetes verticillaris has orientated the indigenous people to use these plants against anemia. The yellow bark of Annickia chlorantha and the yellow color of the decoction of Senna alata make the two plants used in the treatment of hepatitis by 55 informants.

# 6 c) Environmental threatens and benefits

Anacardium occidentale is an important fruit tree in Far North of Cameroon. However, 66 informants recognize that many biotic factors, especially insects threatened its production. Fifty informants say that Azadirachta indica presents harmful and beneficial effects on both animal and vegetal biodiversity. Seventy five people know that this plant improves human health. Twenty seven housewives use Moriga oleifera seeds to purify well water. According to nine cattle breeders, this species is much resisted to drought and that explains the use of its leaves to feed animals in dry season. Aloe spp are planted by 919 indigenous people to fight against drought, because these herbs are xerophytic, succulent and desiccation-tolerant.

The information on the ethnopharmacological data preparation and the precision of plants' habitats, for convinced, usual and suspected or potential medicinal plants are presented in table 2.

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Figure 1: Table 2 : 1 - 4 -

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*[Note: © 2015 Global Journals Inc. (US) Global Journal of Medical Research ( ) B Fever 8 to 30 days after infection, headaches, muscles or joints' pains, weakening, vomiting, diarrhea, cough, and typical cycles varying with fever, shivering, cool sweat and intense transpiration: this is an access malaria. Plasmodiumfalciparum multiplication and red cells or erythrocytes explosion (anemia), cerebral malaria with the blood vessels irrigating the brain infected by Plasmodiumfalciparum that attack the blood red cells. It is often fatal if the treatment is not well follow up. Headaches, muscles or joints' pains, weakening, vomiting, cough, shivering, cool, sweat and intense transpiration, anemia. Malaria Anorexia, fatigue, mild fever, muscle or joint aches, nausea and vomiting, pain in your belly; some people have other issues, such as: dark urine, light-colored stools, jaundice (yellowing of the skin and whites of the yes), itchy feeling, mental changes, such as stupor (being in a gaze) or coma and bleeding inside your body. Hepatitis Anemia, Red blood cells usually live for about 120 days before they die and need to be replaced. Occurrences of varied in intensity pain (crises), are a major symptom. Pain develops when sickle-shaped red blood cells block blood flow through tiny blood vessels to the chest, abdomen and joints; Pain in bones; Hand-foot syndrome: Swollen hands and feet may be the first signs in babies. Frequent infections: damage spleen (organ that fights infection). This may make patient more vulnerable to infections, such as pneumonia. Delayed growth: A shortage of healthy red blood cells can slow growth in infants and children and delay puberty in adolescents. Vision problems, Abdominal swelling,Fever that is the first sign of an infection. Pale skin or nail beds. Yellow tint to the skin or whites of the eyes. Any signs or symptoms of stroke: one-sided paralysis or weakness in the face, arms or legs, confusion, trouble walking or talking, sudden vision problems or unexplained numbness and a headache. © 2015 Global Journals Inc. (US) Volume XV Issue V Version I ( ) B Volume XV Issue V Version I B © 2015 Global Journals Inc. (US)]*

Figure 2: Table 1 :

Previous studies on many of the recorded plants have confirmed their traditional uses and/or their local people's traditional knowledge on environment. On Anacardium occidentale, 262 insect species were recorded and identified. The most important insects attacking this plant are Apate terebrans, Eteoryctis gemoniella, Helopeltis schoutedeni and Helopeltis anacardii, which are respectively wood-borer, leaf-miner, and mirid-bugs and distortion of young leaves. Fortunately beneficial insect species that are predators, parasitoids, pollinators and vertebrate predators live also in A. occidentale trees (16). Azadirachta indica trees are bioactive for man diseases (17) and possess beneficial and harmful effects on biodiversity. For beneficial effects, A. indica trees are much ameliorated plants by its valued nitrogen-fixing role. Also, the crop fields where these trees are planted, various insectpests are destroyed. The bioactive compounds accomplish beneficial effects which interrupts the life cycle of handful living organisms. But the bad consumption of seed oil affected dangerously children by provoking nausea, diarrhea, vomiting, drowsiness, respiratory difficulty, seizures, enlarged liver, general discomfort and die (18) **??**19). Sheep, goats, guinea pigs, avian and aquatic species are also intoxicated by neem (20)(21)(22)(23).

Moringa oleifera plays important roles in the environment such as cyanobacterial removal, purifying water, crop fertilizers, and possible toxicity in it medicinal uses. In the natural water treatment processes seed powder is flocculants which remove color, turbidity and organic matter; the seeds are also coagulants which remove cyanobacteria. The sludge left over from the water purification can be used as a bio-compost for other crops. On the contrary to artificial coagulants and flocculants, the seeds of M. oleifera plant are non-toxic, biodegradable and therefore less handful to the environment. In a dry area of Far North, Moringa oleifera tree by growing fast and well, plays a role in the fight against desertification that is partially caused by climate change. The presence of long taproot makes this plant resistant to the drought condition of this region. It is also used to combine soil erosion in the region where strong winds and long dry spells occur simultaneously (24)(25)(26). Aloe buttneri plants possess fat water-storing leaves. A particularly devastating form of human usage of inselbergs is large-scale extracting due to an increasing demand for granite, iron and gneiss for construction purposes. Aloe buttneri can lead to their complete eradication at the landscape level as it is observed around Yaounde town on hills where the extinction of this species was rapid (27).

# .1 IV. Conclusion

Six plants have beneficial and/or harmful effects on the environment. Suspected and potential medicinal plants represent respectively thirty-seven percent (37 %) and three percent (3 %) of recorded medicinal plants. The application of indirect methods of identification of medicinal plants has permitted to add 40 % of new medicinal uses for this study. Therefore the results of this study represent an important baseline data for the design and implementation of strategies for plants protection and their sustainable uses. The thorough application of these methodologies can reveal important suspected and potential medicinal plants in several sociocultural groups of Africa. Further work is however required to fully understand the similarities of color and/or forms of plant organs and human organs. Increasing methods on how to collect indigenous environmental knowledge in the field is demonstrating a solid base from which successful environmental threats' fight should be achieved.

# .2 V. Acknowledgements

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