

Full Length Research Paper

An assessment on the uses of *Loranthaceae* in ethno pharmacology in Cameroon: A case study made in Logbessou, North of Douala

Dibong Siegfried Didier^{1*}, Engone Obiang Nestor Laurier², Ndongo Din¹, Priso Richard Jules¹, Taffouo Victor¹, Fankem Henri¹, Salle Georges³, Missoup Alain Didier⁴, Boussim Issaka Joseph⁵ and Amougou Akoa⁶

¹Laboratory of Plant Ecology, Department of Botany, Faculty of Science, The University of Douala, P. O. Box 24157, Douala, Cameroon.

²Tropical Ecology Research Institute, P. O. Box 13354, Libreville, Gabon.

³Laboratory of Plant Parasitology, The University Pierre and Marie Curie (Paris VI), 4 place Jussieu, case courrier 155, 75252 Paris, Cedex 05, France.

⁴Department of Biology of Animal Organisms, Faculty of Science, The University of Douala, P. O. Box 24157, Douala, Cameroon; UMR 7205, MNHN, Paris, 55 Rue Buffon.

⁵Laboratory of Plant Biology and Ecology, The University of Ouagadougou 03 P. O. BOX 848, Ouagadougou 03, Burkina Faso.

⁶Department of Plants Biology and Physiology, Faculty of Science, The University of Yaoundé I, P. O. Box 812, Yaoundé, Cameroon.

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***Loranthaceae* are known as hemiparasites of forest and cultivated trees. A study on their uses in ethno pharmacology were carried out in Logbessou in the North of Douala (Cameroon). We used a structured questionnaire to interview 150 active traditional healers in 2008. 82% of the healers recommended *P. capitata* for the treatment of at least 22 diseases. We discuss the uses of *Loranthaceae* with regard to information available in the literature for European countries.**

Key words: *Loranthaceae*, ethno pharmacology, questionnaire, traditional healers.

INTRODUCTION

Loranthaceae are hemi parasites and epiphyte plants taking water and minerals from their hosts' tissues through a complex endophyte system (Sallé, 1978). Representatives of this family are largely distributed in the tropics and are sprawling to other regions. A total of 950 species and 77 genera belong to this family. In Cameroon, 7 genera including 26 species have been inventoried (Balle, 1982).

Relationships between *Loranthaceae* and their host plant were investigated in Europe. Glatzel (1983) shows that generally, they take high quantities of mineral macro elements such as Na, K, Ca and Mg from their hosts.

Moreover, this author stated that the relative proportion of the different ions depends on the *Loranthaceae* species and its host. Organic acids and fatty acids are

around twenty one and their level varies with the tree serving as host (Baudino and Sallé, 1987). Linoleic, palmitic and oleic acids are sometimes more than 80% of the total fraction. Saponosides, steroids and terpenes have also been identified (Obata, 1941). Pigments found in *Loranthaceae* are the ones of superior plants and seem not to be influenced by the host (Deliu and Stirban, 1976). Sugars and related substances belong to three groups: Oses and polysaccharides, polyols and ascorbic acid. Alkaloids and growth substances are also quoted (Krivokapic, 1977). The seeds and leaves of *Loranthaceae* have more than 7 mg of ascorbic acid per gram of wet weight, which is the equivalent in lemons (Rikovski and Bessaritch, 1966). The link between vitamin C and cancer has been already reported (Sporn, 1980). Viscotoxines, proteins of Vester and lectines, three principal related substances found in *Loranthaceae* were also proven to be responsible for the cancerostatic action of the group of plants (Baudino and Sallé, 1987). The scientific and

*Corresponding author. E-mail: didierdibong@yahoo.fr.

medical interest in European *Loranthaceae* increased in 1920, when Steiner emphasized its curative feature. This author was the first to show the importance of *Viscum album* L., a European *Loranthaceae* species, against cancer (Kienle and Kiene, 2007).

Phenolic compounds found in *Loranthaceae* are used as powerful antioxidants (Kehrer, 1993; Frankel et al., 1995; Kampa et al., 2000; Marfak, 2003). There are phenolic acids, phenylpropanoids and flavonoids. According to Middleton (1996), studies on flavonoids are incomplete. The mechanisms of action of antioxidants are varied: direct blocking of free radicals (atoms and molecules containing electrons which are inappropriate) or stoichiometric reaction (mole to mole reaction with radicals to be eliminated); inhibition of the enzymes and chelation of ions responsible of the free radicals production; protection of the antioxidant defence system (Halliwell, 1994).

In Africa, investigations on *Loranthaceae* deal mostly with crop protection (Dibong et al., 2008). For instance, their therapeutical importance has been fewless investigated. However, some data are available for Nigeria (Oboh and Nworgu, 2008; Okpuzor et al., 2009). The aim of the present paper is to assess on the uses of *Loranthaceae* in ethnopharmacology in an African country. The study was carried out in 2008 at Logbessou, a neighbourhood situated in the North of the town of Douala (14th kilometer point).

METHODOLOGY

Study area

Geographic coordinates of the Douala town are: 03° 40' - 04° 11' N and 09° 16' - 09° 52' E. The mean altitude is 13 m. Douala belongs to the equatorial domain with a particular climate feature, "The camerounian type". Douala is characterized by two seasons: a long rainy season of at least 9 months and a short dry season. Precipitations are of around 4000 mm per year and the mean of temperatures is near of 26.5°C. The relative humidity of the air remains high all over the year and is around 100% (Din et al., 2008).

Assessment of the knowledge about *Loranthaceae*

The study was carried out after traditional healers at Logbessou. Interviews were semi-structured (Daoudou-Guebas, 2000) with a questionnaire constituted by closed questions, which allowed to answer yes or no, and opened questions (the person answering is free to do so according to his/her point of view).

One hundred and fifty active traditional healers have been interviewed. The questions were related to the biology, ecology, leakage and medicinal uses of *Loranthaceae*.

RESULTS

Traditional healer perceptions on the biology and ecology of *Loranthaceae* in Douala region

The majority of traditional healers (90%) recognized *Loran-*

thaceae on their host trees. In Logbessou, host trees are constituted by 99% of fruit bearing trees and 1% of ornamental ones. Traditional healers reported the existence of only one species. However, 78% out of the 90% of healers which recognized *Loranthaceae*, described this species as characterized by yellow flowers ending with red apex. Based on those observations and other investigations in Logbessou, this species was later identified as *Phragmanthera capitata* (Sprengel) S. Balle by us (Dibong et al., 2008). *P. capitata* is called "cancer" in French, "samacope" in Pid'gin, "tsap'la" in Menoua language and "bara awali" in Beti.

The biological cycle of *Loranthaceae* is not well known by the traditional healers. Among them, 58% stated that the seeds are disseminated by birds while only 42% knew the fructification period of these plants. The majority of healers (81%) did not know that *Loranthaceae* are from the forest. Only 18% of them agreed with the efficiency of leakage practices against *Loranthaceae*.

Uses of *Loranthaceae* in traditional pharmacopeae

The medical values of *P. capitata* were recognized by 82% of healers who stated that *Loranthaceae* could be used to cure or control a wide variety of diseases. They include nerves attacks, convulsions, chronic muscular pains, diabetes, respiratory dysfunctions, rheumatism related pains, epilepsy, dizziness, uterine hemorrhage, hypertension, hypotension, back pains, kidney pains, menopause, headache, heart palpitations, general purifications, irregular menstruations and nose bleeding. According to them, *Loranthaceae* are used to cure at least 22 diseases. Some healers from the "banen" tribe also acknowledged some mystical powers associated with the use of *Loranthaceae*.

Parts of the plant used for treatments are leaves and branches knowing that *Loranthaceae* do not have roots. All the traditional healers thought that viscine tissue is toxic when ingested. They stated that the ingestion of fruits leads to vomiting, hypotension and cerebral dysfunctions. A higher number of ingested fruits (superior to 10) could lead to death by a heart attack. Fresh leaves are used in infusion or macerer.

The medicine dosage of the given for treatment is not standard. According to the healers of Logbessou, *P. capitata* strengthen the metabolism and is a panacea. They also emphasized that *P. capitata* was used in traditional pharmacopeae in Africa long time ago.

DISCUSSION

This study carried out behind traditional healers of Logbessou (Douala's 14th kilometres point), provide some evidence of the lack of knowledge about phenology, ecophysiology and biology of the *Loranthaceae*. *P. capitata* has been found to be the only species occurring in our study area. Previous data showed that the parasitism of this angiosperm corresponds to all the country's ecologic variations. According to Dibong et al.

(2009a, b) losses due to *P. capitata* appeared very high for fruits bearing trees. In Douala, the percentages of parasitism varies from 17.53 to 35.05% ($p < 0.05$) between the sites (Dibong et al., 2008). We also highlighted the lack of knowledge of the healers concerning fighting practices used against *Loranthaceae* in Logbessou.

This study represents the first assessment on the place of *Loranthaceae* in Cameroon. Their uses in the treatment of many diseases has been already reported especially for European countries. Swanson-Flatt et al. (1989), Gray and Flatt (1999), Onal et al. (2005) and Orhan et al. (2005) stated that these family of plants can be used in the illness involving pancreas such as diabete. These authors claimed also that *Viscum album* L. could be recommended in cases of arteriosclerosis and some cerebral, congestive and menopausal dysfunctions. Swanson-Flatt et al. (1989) showed the importance of this plant against the hypotension and described his action mode. Karakas et al. (2008a) though that the viscotoxin could be responsible of the action of the extracts of *V. album* L. on blood circulation. They also though that it could be used in cough, asthma, some types of convulsions and nephritis with nitrogen retention. Ergun et al. (1995), Cook and Samman (1996), Deliorman et al. (2000) and Tenorio et al. (2005) agreed with Karakas et al. (2008a) reported that *Loranthaceae* could be used to regulate the circulatory system. Baudino and Sallé (1987) stated that the "European Gui" is administrated for homeopathic medicine in France. However Radenkovic et al. (2006) do not agreed with them. According to Gaultier (1938), *V. album* L. was recommended at the end of 16th century in case of epilepsy.

Some scientific investigations have showed the cancerostatic feature of *Viscum album* L. (Mengs et al., 2002; Ernst et al., 2003; Harmsma et al., 2004; Urech et al., 2005; Grossarth-Maticek and Ziegler, 2008). It is possible that the *V. album* L. is involved in the restauration of the "creative force" of the organism under threat by the cells proliferation tendencies. The cancer treatment by *V. album* L. was introduced in 1920 by Steiner and Wegman who were the founders of the anthroposophic medicine. Some studies recommended *V. album* L. by injection for cancer treatment, particularly for solid cancers (Mahfouz et al., 1998; Matthes et al., 2005). The *V. album* L. extracts are recommended in three principal cases: in tumour which cannot go through a surgery, in the prophylaxis of relapses and in the treatment of precancerous state (Kienle and Kiene, 2007). Matthes et al. (2005), who stated that the efficacy of this treatment is still controversial, do not agreed with these authors.

Preparations of *V. album* are commercialised in the world and particularly in central Europe under the label of Abnobaviscum, Helixor, Iscador and fermented *V. album* (Kienle and Kiene, 2007).

Rosell and Samuelsson (1966) and Lutomski (1986) acknowledged the bad effect of *V. album* when it is used at low or high doses. Spiller et al. (1996) stated that the

pseudo bays and may be the leaves can cause a severe toxicity. According to Bauer et al. (2005), severe allergies are rare. However, pregnant women and peoples with severe hepatitis or with renal dysfunctions should not take this medication. It seems that tropical *Loranthaceae* are more toxic than their European counterpart (Spiller et al., 1996; Krenzelok et al., 1997). Further studies are needed to prove of that.

Most of these diseases were evoked by traditional healers of Logbessou. They also emphasized the uses of *P. capitata* in menstruation regulation, uterine hemorrhage loss after delivering and menopausal disturbances (heart biting, palpitations, dizziness). Moreover, some assertions of traditional healers of Logbessou seem to revealed that the *Loranthaceae* have some body purifying substances. However, some of the diseases found in the literature for the *V. album* L. extracts was not mentioned by the healers. For instance, the intestinal colitis (Karakas et al., 2008b) and hepatitis (Harvey and Colin-Jones, 1981) were not evoked.

Conclusion

The imput of the *Loranthaceae* in the ethnopharmacology seems to be certain. The action modes of African *Loranthaceae* extracts are yet to be completely understood. To date, most of them have never been characterized. Hence, further relevant studies are warranted to bring more light to the mechanism of action of different chemical compounds of the *Loranthaceae* to better understand the curative features of this group of plants.

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