



Evaluation of Chemical Properties of Mistletoe Leaves from Three Different Trees (Avocado, African Oil Bean and Kola)

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ABSTRACT

A comparative evaluation of the chemical composition of mistletoe leaves (*Viscum album*) growing on three different trees: avocado pear (*Persea Americana*), African oil bean (*Pentaclethra macrophylla*) and kola (*Kola nitida*) was undertaken. Fresh mistletoe leaves were obtained from the three different trees and thoroughly washed with water after which they were dried at room temperature ($28 \pm 1^\circ\text{C}$) for 18 days during the dry season (December). After, the dried leaves were shredded and packaged. The samples were then subjected to phyto-chemical, vitamin and mineral analyses using standard methods of analyses. Anthocyanins ranged between 0.34 ± 0.003 and 0.37 ± 0.181 mg/g, Tannin, 2.09 ± 1.141 and 3.24 ± 0.003 mg/g, Chlorophyll a, 0.38 ± 0.004 and 0.39 ± 0.018 mg/g, Chlorophyll b 0.52 ± 0.120 and 0.60 ± 0.001 mg/g. Vitamin B1 ranged between 0.85 ± 0.038 and 0.94 ± 0.001 mg/g, Vitamin B2, 0.55 ± 0.007 and 0.61 ± 0.003 mg/g, Vitamin C, 0.77 ± 0.003 and 1.98 ± 0.003 mg/g, Folate 0.53 ± 0.004 and 0.58 ± 0.004 mg/g, Magnesium ranged between 0.21 ± 0.002 and 0.92 ± 0.003 mg/g, Calcium 2.14 ± 0.004 and 2.26 ± 0.001 mg/g, Sodium 0.01 ± 0.000 . Iron, 1.24 ± 0.005 and 1.42 ± 0.006 mg/g. Sample obtained from oil bean tree showed lower and differed significantly ($p < 0.05$) in Anthocyanin and Chlorophyll b with samples obtained from avocado and kola trees. The sample obtained from avocado tree showed higher Tannin content compared with samples obtained from oil bean and kola trees ($P \leq 0.05$). There were significant differences ($P < 0.05$) between the samples in all the vitamins. The minerals showed significant differences in the samples ($P < 0.05$) except in sodium content which was very low in all the samples. Mistletoe leaves are shown to have a rich chemical composition and could thus serve as a source of these phyto-chemicals, vitamins and minerals.

Keywords: Trees, mistletoe, phyto-chemicals, vitamins, minerals

Introduction

African mistletoes (*Loranthus micranthus*) have tough, oblong, green leaves, attractive flowers and waxy, translucent white berries with a viscous mesocarp (Kernzehola *et al.*, 1997). Mistletoes are considered as parasitic plants growing wild on the branches or trunks of economic trees in the tropics. Mistletoe grows wild on various economic trees in Nigeria and are usually cut down and destroyed. This is due to the damages they cause to their host trees which lead to huge economic loss. Mistletoes anchor themselves to their host by means of

adventitious roots that penetrate through the host tissues and adversely affect the growth and fruiting performance of the host tree. Mistletoe takes water and minerals from its host, but not carbohydrates which it can produce by photosynthesis (Hostanska *et al.*, 1995; Solar *et al.*, 1998).

The North Americans and Germans use mistletoe as a ceremonial plant, while the Greeks believe that it has mystical powers (Brown, 1992). The Druids use mistletoe to welcome the New Year and also for religious rites and medicinal purposes, such as treating sterility, diabetes, epilepsy and some other chronic diseases (David, 2001).

It is scantily used in Nigeria by a few individuals as a remedy for several human and animal ailments which

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include diabetes, dysentery, wounds, diarrhoea, cancer and hypertension (Akinmoladum *et al.*, 2007). Several studies have revealed that mistletoe has considerably antioxidant potential, justifying its therapeutic use in herbal medicine (Obatomi *et al.*, 1994; Deeni and Sadiq, 2002). Aqueous extract of mistletoe has been reported to normalize blood sugar and cholesterol levels in rat (Iheanacho *et al.*, 2008). Mistletoe contains lectins which are protein that could bind sugars and possibly reduce the blood sugar level (Hostanska *et al.*, 1995).

A few rural subsistent farmers use the leaves to feed their goats that have newly given birth to kids. However, most individuals do not even know about its nutritional and health benefits or perhaps they are skeptical about its chemical composition which has not been well published. The amount of chemical compounds may vary in mistletoe leaves depending on the source of the leaves.

The objective of this study is to compare the chemical composition of mistletoe leaves plucked

from three different trees (Avocado pear tree, African oil bean tree and kola tree) in Nigeria.

Materials and Method

Source of raw material

Fresh mistletoe leaves were harvested from three different trees such as Avocado pear, African oil bean and kola tree respectively from Affa Town in Udi local Government Area, Enugu, Nigeria.

Preparation of raw material

The fresh mistletoe leaves were thoroughly washed with clean water separately according to how they were collected from different trees; they were then dried during the dry season at room temperature ($28\pm1^{\circ}\text{C}$) for 18 days, after which they were separately shredded and packaged.

Key:

O = Mistletoe leaf obtained from oil bean tree

A = Mistletoe leaf obtained from avocado pear tree

K = Mistletoe leaf obtained from kola tree.



Fig. 1: Fresh mistletoe leaf from avocado (*Persea americana*) tree

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