



***Lannea antiscorbutica* Hiern Engl. (Anacardiaceae): Phytochemistry, Pharmacology and Future Directions**

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Abstract The aim of the present study was to collect data on the medicinal uses of *Lannea antiscorbutica* Hiern Engl. (Anacardiaceae) using references from databases such as Science Direct, PubMed, PubMed Central, Google scholar, etc. An extensive survey of literature revealed that *Lannea antiscorbutica* is a pharmacologically and chemically less studied plant species and will constitute a good source of health promoting and original secondary metabolites that could have many wonderful applications. The results of the present review of literature make *Lannea antiscorbutica* an interesting candidate for Research & Development of new hits for the management of genetic and metabolic diseases like Sickle cell anemia and Diabetes mellitus.

Keywords *Lannea antiscorbutica*, Phytochemistry, Pharmacology

Introduction

The World Health Organization (WHO) recognizes that traditional and complementary medicines (TCM) are a vital part of the global health care system [1-4]. In Africa, it is estimated that over 80% of the population continues to rely on medicinal plant species to meet their basic health care needs [5-6]. The Traditional Medicine (TM) performed a good clinical practice and is showing a bright future in the therapy of various ailments.

Lannea antiscorbutica is a large savannah tree of ethno-pharmacological relevance in African TM. The plant species is traditionally used by African Women in Kinshasa city (Democratic Republic of the Congo) for their intimate hygiene and was reported to contain various secondary metabolites [7]. It can therefore, be hypothesized that this plant species could possess a broad spectrum of biological activities that could justify its use in ethno-medicine. The present literature survey was undertaken in order to make the state of research on this plant species with the aim of its integration in a future program of Tropical Plants Screening Research (TPSR) for genetic and metabolic diseases like Sickle cell anemia and Diabetes mellitus.

Botany Description

Lannea antiscorbutica is a shrub or tree up to 15 m. tall; trunk erect, covered by greyish bark; old branches rugose and glabrous; branchlets brownish-grey to almost black, smooth or striate, glabrous or with a few stellate hairs. Leaves (3)5-9(11) foliolate; petiole and rachis 4-25(43) cm. long, subterete, ± canaliculate above, glabrous or very sparsely stellate-hairy; leaflets subconcolorous or, when dried, almost black above and brown beneath, 4.14(18) × 1.8-6.7(8.2) cm., lanceolate-elliptic or ovate to elliptic or oblong, membranous to papyraceous, the young ones with a narrow acumen, resinous and covered by minute pinkish or whitish glandular hairs mixed or not with stellate ones, when adult glabrous on the lamina except for tufts of simple



hairs in the nerve-axils, attenuate to the apex or \pm abruptly acuminate, the acumen 0.5–2 cm. long and somewhat broad and blunt; terminal leaflet symmetric, with petiolule 2–4 cm. long, the lateral ones unequally rounded or sub-cuneate at the base and with petiolule 0.1–0.6 cm long; midrib and lateral nerves slender, not or slightly raised on both surfaces, reticulation visible below in the oldest leaves. Inflorescences: spike-like, arising before the leaves, crowded at the apices of the branchlets; axis 2.5–10 cm. long, pinkish-salmon-stellate-tomentose; pedicels 0.2–2.5 mm. long. Calyx-segments: c. 1 mm. long, ovate, entire, obtuse, with few stellate hairs or glabrous. Petals: c. 3×1.5 mm, oblong-ovate, unguiculate. Drupe: 7–9(12) \times 6–7 mm, irregularly ovoid [8].

Geographic Distribution

Tropical Africa: Democratic Republic of the Congo, Angola, Zambia, Zimbabwe, Tanzania, Mozambique, Swaziland [8].

Synonyms

Calesiam antiscorbutica Hiern

Odina antiscorbutica (Hiern) K. Schum.



Figure 1: Fruits and fruiting branches of *Lannea antiscorbutica*



Ethnobotany

Lannea antiscorbutica is a multipurpose plant with a high traditional and medicinal uses for the maintenance of free health life. Traditionally the plant is used as stimulant, pain reliever etc. whereas the plant possess beneficial effects such as antimicrobial, anti-inflammatory, and many other properties. The decoction of crushed bark of *Lannea antiscorbutica* with *Carica papaya* applied for toothache, pulled muscles and fractures. The decoction root bark of the plant is used to treat pain in the Mbanza-Ngungu region of the Kongo Central Province, Democratic Republic of Congo and in Uige province (Republic of Angola) [9-11].

Phytochemistry and Pharmacology

The phytochemical screening of *Lannea antiscorbutica* revealed the presence of various secondary metabolites including the phenols, tannins, flavonoids, anthocyanins, diterpenoids and triterpenoids. The presence of these secondary metabolites could partially justify the use of this medicinal plant species by African women for their intimate hygiene and could also prevent on the negative consequences of such practice (side effects) [7]. Indeed, recent findings showed that the various types of chemical compounds found in the studied plant extracts have a broad range of biological properties. For example, phenolic compounds are reported to have antibacterial activities. The astringency of the tannins could be responsible of vaginal muscles toning up and vaginal diameter contraction. While others phenolic compounds such as anthocyanins, flavonoids and leuco-anthocyanins which are present in *Lannea antiscorbutica*, could inhibit or reduce the vaginal tissue ageing process because of their radical scavenging properties [1-2]. According to Boua *et al.* [6], the flavonoids possess aphrodisiac effects. The presence of secondary metabolites such as flavonoids, quinines and terpenoids could have negative effect on the vaginal microbiota because of their antimicrobial activities [7]. Many reports revealed that saponins possess fungicidal, anti-inflammatory and spermicidal effects. Plant containing secondary metabolites having such properties could be useful in the prevention of vaginal infections as well as inflammatory reaction. This plant could also down regulate the mobility of spermatozoids or destroy them. The presence of saponins in *Lannea antiscorbutica* could also induce the cicatrization of the microlesions of the wall of a drained vagina, caused by frictions of genitals at the time of the sex act [12]. Anthocyanins are reported in the literature for their antisickling activities [13-18] while the anti-diabetic properties of some African plant species are due to flavonoids and tannins [19].

Conclusion

The literature survey revealed that *Lannea antiscorbutica* is a pharmacologically and chemically less studied plant species, although the diversity of secondary metabolites present in the plant species especially anthocyanins and flavonoids show that *L. antiscorbutica* is a good candidate for Tropical Plants Screening Research program for the development of new lead compounds against genetic and metabolic diseases like Sickle cell anemia and Diabetes mellitus.

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