

Review

Blighia sapida K. D. Koenig: A review on its phytochemistry, pharmacological and nutritional properties

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Ethnopharmacological relevance: Ackee plant (*Blighia sapida* K. D. Koenig) (Sapindaceae) is used in Sub-Saharan Africa (where it has its origin) and in different parts of the world (The Caribbean, North and South America, Europe). Traditionally it is used to manage numerous ailments like backache, constipation, cancer, fever in young children, gonorrhoea, dysentery, psychosis, hernia, stomach ache, malaria, rheumatism, typhoid etc. It is also used as a cosmetic and food source. The fruit aril is the main constituent of the Jamaican National Dish. This review summarizes its phytochemistry, nutritional properties, ethnobotany and pharmacology. The need to gather up to date information on this plant, to facilitate in vivo and in vitro investigations for verification of some of the local claims necessitated this review.

Materials and methods: A literature search was performed on Ackee using ethno botanical text books and scientific databases such as PubMed, Scopus, EBSCO, Science-direct, Google, Google Scholar and other web sources like records from PROTA, PROSEA, JSTOR and Botanical Dermatology Database.

Results and discussion: This review highlights the traditional uses of parts of the Ackee plant: the bark, the leaves, capsules, roots and seeds. They are used in the management of diverse disease conditions such as diarrhoea, conjunctivitis, fever, internal hemorrhage, dysentery, cutaneous skin infections, and bacterial infections amongst others. Only nineteen compounds have been reportedly isolated from the parts of *B. sapida*: Alkaloids, quinines, polyphenols, and steroids, their glycosides, sesquiterpenes and triterpenes. Some of the plant extracts and its isolated compounds showed anticancer, antimicrobial, antidiarrheal, antioxidant and hypoglycemic activities both in vitro and in vivo. The seed/leaves have also been used as insect repellants and the leaves have been reported to have lethal effects on larvae of various mosquitoes' species. The oil contains a lot of nutrients and may be considered for edible consumption after safety has been confirmed. Hypoglycin A and the less malignant hypoglycin B are found in the unripe aril of Ackee and consumption results in hypoglycemia, vomiting, gluconeogenesis disruption which can result in coma and death. The untapped economic potential of its fruits is glaring in West Africa countries.

Conclusion: Though *B. sapida* has been put to enormous traditional use, the pharmacological studies conducted are not sufficient, most studies are either in-vivo or in-vitro. More work is required (well-designed pharmacological tests, randomized clinical trials) to evaluate these medicinal claims. This review provides a basis for future research. The isolation of more compounds, detailed pharmacological investigations, exploration of food use and detoxification techniques are key areas to investigate.