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A phytochemical and pharmacological review on *canarium solomonense*

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Abstract**—** *The genus Canarium L. consists of 75 species of aromatic trees which are found in the rainforests of tropical Asia, Africa and the Pacific. The medicinal uses, botany, chemical constituents and pharmacological activities are now reviewed. Various compounds are tabulated according to their classes their structures are given. Traditionally canarium solomonense have been used to treat a broad array of illnesses. Pharmacological actions for canarium solomonense as discussed in this review include antibacterial, antimicrobial, antioxidant, anti-inflammatory, hepatoprotective and antitumor activity.*

Keywords**— Canarium L., Aromatic Trees, Medicinal Uses, Chemical Constituents, Pharmacological Activities**

I. INTRODUCTION

Canarium is a genus of about 100 species of tropical and subtropical trees, in the family Burseraceae. They grow naturally across tropical Africa, south and southeast Asia, Indochina, Malesia, Australia and western Pacific Islands; including from southern Nigeria east to Madagascar, Mauritius, Sri Lanka and India; from Burma, Malaysia and Thailand through the Malay Peninsula and Vietnam to south China, Taiwan and the Philippines; through Borneo, Indonesia, Timor and New Guinea, through to the Solomon Islands, Vanuatu, New Caledonia, Fiji, Samoa, Tonga and Palau. [1]

Canarium salomonense B. L. Burtt was formerly used by Solomon Islands cultures as principal sources of food (seeds), resin, and wood as well as a variety of ceremonial activities. Although the species are botanically quite similar, Babatana and Ririo speakers from Lauru (Choiseul) Island consider *C. salomonense* superior for many uses, particularly in activities of special spiritual significance. Ethnographic interviews were used to quantitatively evaluate hypotheses about community perceptions of differences between the species. Weighted and unweighted evaluations were made within emic activity categories based upon frequency of interaction with *Canarium* and importance of species selectivity within the interaction activity. No significant difference was found between the species based upon unweighted frequency of use within activity categories. However, C. salomonese is significantly more important for use in activities when its relative cultural importance was used to weight the comparison. This example supports a broad conclusion that importance of a species to a culture is more complex than its simple usefulness. [2]

Binomial name: Canarium strictum
Kingdom: Plantae
Family: Burseraceae
Genus: Canarium
Tamil name: Karunkugiliyam
Malayalam: Pantham, Thelli
Kannadam : Haalu maddi
Hindi name: Kala dammar

Fig.1 leaves of Canarium solomonense

Pharmacological studies

Antibacterial activity

The antibacterial activity of Canarium solomonense Roxb, an Ethnomedicinal plant species was studied. The methanol extract created a larger inhibition zone (16.41 mm) against the bacteria Moraxetta sp. Mucor rouxii and Rhizopus sp. were similarly inhibited to a high degree by methanol and ethyl acetate extracts (20.67 and 15.72 mm). [3]

Anti- inflammatory activity

The anti- inflammatory activity of Canarium solomonense Roxb essential oil was studied. At the higher dose of EOCS 100 mg/kg, the results showed dose dependent action. In acute inflammatory animal models, EOCS demonstrated significant anti-inflammatory effectiveness when compared to the conventional medication diclofenac sodium. [4]

Anti-microbial activity

Canarium solomonense gum resin antimicrobial activity was investigated. Compounds A and B were isolated from chloroform extract using the counter current distribution technique. The results reveal that compound A and compound B have broad-spectrum antibacterial action at 100g/ml concentrations. For the gram-positive, gram- negative bacteria and fungi, the inhibitory action of each drug is very close and identical in size. [5]

Anti-oxidant activity

Unpredictable stress exposure for 7 days reduced Cu, Zn superoxide dismutase, and catalase activity, while increasing glutathione peroxidase activity and lipid peroxidation, and decreasing glutathione levels in blood plasma, frontal cortex, and hippocampus. Oral treatment of EA extract at a dose of 200 mg/kg p.o. corrected these stress-induced oxidative changes with an effectiveness comparable to that of melatonin. [6]

II. CONCLUSION

This review highlights the fact that only about 12% of the total Canarium species have been studied for chemistry and pharmacological activities. The diversity of secondary metabolites and pharmacological actions reviewed in this work demonstrate that there is much to be discovered in this family. Indeed, as compared to many other genus in this family, Canarium is still very much under studied. This could be explained by the fact that Canarium species are mainly found in primary rainforest where they face extinction due to intensive logging and little conservation. There is therefore a compelling need to study Canarium species which may shelter some drugs for the future.

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