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## Bioactivity and phytoconstituents of *Canarium zeylanicum*, a medicinal plant endemic to Sri Lanka

L.C.P.T. Liyanaarachchie<sup>1,2</sup>, M. Gunatilake<sup>3</sup>, L. Jayasinghe<sup>4</sup> and B.M.R. Bandara<sup>2,5,\*</sup>

<sup>1</sup>Department of Pharmacy, University of Peradeniya, Sri Lanka
<sup>2</sup>Postgraduate Institute of Science, University of Peradeniya
<sup>3</sup>Department of Physiology, University of Colombo, Sri Lanka
<sup>4</sup>National Institute of Fundamental Studies, Hanthana Road, Kandy, Sri Lanka
<sup>5</sup>Department of Chemistry, University of Peradeniya
\*bmrbandara@gmail.com

Canarium zeylanicum (Retz.) Blume is an endemic plant used in the indigenous system of medicine of Sri Lanka. Its extracts have shown antioxidant and mosquito larvicidal properties. The oleoresin, bark and timber of the plant have furnished amyrin, amyrenone, phellandrine and sitosterol. Despite its traditional use in treating diabetes, the plant has not been evaluated for antidiabetic and associated bioactive properties. We investigated the bark extracts of C. zeylanicum for antidiabetic, anticandidal, cytotoxic and antioxidant properties, using in-vitro and in-vivo bioassays, and analyzed the most promising extract for phytoconstituents. The organic solvent (methanol:dicholoromethane 1:1) extract (OSE) and the hot water extract of the bark displayed considerable a-amylase and a-glucosidase enzyme inhibitory, antioxidant (against 2,2-diphenyl-1-picrylhydrazyl radical) and anticandidal (against Candida albicans, C. parapsilosis, C. glabrata, C. krusei and C. tropicalis) properties and low toxicity to brine shrimps. OSE, being the most potent extract, was further evaluated for antidiabetic properties (fasting blood glucose levels) and toxicity (serum liver enzymes and creatinine levels) using Wistar rats. OSE produced significant reduction in blood glucose levels in both single dose and multiple dose assays and remarkable glucose tolerance within 1 h of external glucose load; OSE caused no hepatorenal toxicity in rats. Fractionation of OSE, guided by  $\alpha$ -amylase and  $\alpha$ -glucosidase enzyme inhibitory assays, afforded three highly polar active fractions that contained tannins and flavonoid glycosides. Chromatographic fractionation of OSE gave  $\alpha$ - and  $\beta$ -amyrin, lupeol, *n*-hexadecanoic acid and 9(Z)-octadecenamide. Lupeol and unidentified tannins and flavonoid glycosides are likely to contribute to antidiabetic activity of OSE. The endemic plant C. zeylanicum merits further studies that will lead to clinical evaluation of its active fractions/compounds for treating diabetes.

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Keywords: Canarium zeylanicum, antidiabetic, toxicity, anticandidal, antioxidant

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