606/E2

Evaluation of antioxidant, anti-inflammatory and anticancer activity of solvent extracts from Sri Lankan Thebu leaf (*Costus speciosus*)

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Costus speciosus is an ornamental plant and well known as Thebu in Sri Lanka. Thebu leaves are traditionally consumed as a green leaf salad. However, the pharmacological effects of thebu leaf have not been studied extensively. In this study, antioxidants, anticancer and anti-inflammatory effects derived from Sri Lankan thebu plant (*C. speciosus*) leaves were assessed. For the antioxidant activity, 2,2-diphenyl-1-picrylhydrazyl (DPPH), hydroxyl and alkyl radicals scavenging potentiality were measured using electron spin resonance (ESR) spectroscopy. The ethyl acetate fraction indicated the strongest scavenging activity against hydroxyl and alkyl radicals with the IC_{50} values 0.046 and 0.055 mg mL^{-1}, respectively. The aqueous fraction indicated the highest DPPH radical scavenging activity as IC_{50} value 0.110 mg mL^{-1}. For the anticancer activity assay, the two different cancer cell lines; human promyelocytic leukemia cell line (HL-60) and human lung carcinoma cell line (A549) were used and the calculated IC_{50} values from ethyl acetate fraction were 26.06 and 31.02 µg mL^{-1}, respectively. Moreover, the inhibitory effect of nitric oxide (NO) production (%) was reported as the highest from chloroform and hexane fractions against lipopolysaccharide (LPS) induced RAW 264.7 cells. Cytotoxcity effects were not observed at the concentrations used against LPS-induced macrophages (RAW 264.7 cells) *in vitro*. Taken together, these results showed for the first time, that the Sri Lankan thebu leaf extracts have profound pharmacological effects against oxidative stress, inflammations and cancers.

Keywords: Antioxidant, anti-inflammatory, anticancer, *Costus speciosus,* Thebu leaves

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