

ISOLATION AND CHARACTERIZATION OF PHENOLIC COMPOUNDS FROM ANTIDIABETIC PLANT, *Costus speciosus*

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The medicinal plant *Costus speciosus* (Koen) Sm. or crepe ginger, *Thebu* in Sinhala, belongs to the Family *Costaceae* and inherits a range of pharmacological activities, antidiabetic effect being reported as of great importance. The plant is also well known for its antioxidant, antibacterial, anthelmintic, anticancer, anxiolytic, anti-inflammatory, antipyretic, hepato-protective and diuretic properties. Phenolic compounds are highly significant plant secondary metabolites that exert various health benefits in humans, including antioxidant effects, chemopreventive properties and anti-inflammatory activity. Therefore, the current study focused on isolating phenolic compounds in the leaf extracts of *C. speciosus*. Dried, powdered leaves were subjected to sequential extraction with hexane, ethyl acetate and methanol through ultrasound sonication. Ethyl acetate and methanol extracts were combined, re-dissolved in dichloromethane and partitioned with aqueous sodium bicarbonate followed by aqueous sodium hydroxide. Aqueous layers were re-extracted with ethyl acetate after neutralization, and the ethyl acetate extract was fractionated via silica gel column chromatography and size exclusion chromatography (Sephadex LH-20) and PTLC. Isolated compounds were characterized via ¹H NMR and ¹³C NMR spectroscopy. This approach furnished *trans*-cinnamaldehyde, *p*-coumaric acid, 4-hydroxybenzoic acid, vanillic acid, ferulic acid, indole-3-carboxaldehyde, kaempferol-3-*O*- β -D-glucopyranoside, sitosterol glucoside and (*E*)-1,3-bis(4-hydroxy-3-methoxyphenyl) prop-2-en-1-one. These compounds possess several bioactivities, including antioxidant, antibacterial and anti-inflammatory activities. Dissolving phenolic compounds into a basic aqueous layer and re-extraction with organic solvent after neutralization seems to be an efficient method to isolate phenolic compounds from plant extracts.

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Keywords: *Costus speciosus*, Phenolic compounds, Leaf extracts