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Chemical composition and anti-diabetic properties in leaves of accession of cinnamon (*Cinnamomum zeylanicum*) Sri Wijaya and Sri Gemunu

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Cinnamomum zeylanicum is an evergreen tropical tree which is proven to have hypoglycaemic properties. Proanthocyanidins, which are phenolic compounds belonging to the class of flavonoids present in cinnamon are considered as the main bioactive component which imparts a hypoglycaemic effect. Although oral hypoglycemic synthetic drugs can achieve this, synthetic drugs cause several side effects on human health. Hence, the purpose of this study was to investigate natural herbs that have fewer side effects for managing diabetes. Phytochemicals that are responsible for the anti-diabetic properties in two accessions of *Cinnamomum zeylanicum* leaf, known as Sri Gemunu and Sri Wijaya, were tested for the hypoglycemic effect. Out of the three extraction methods; ethanolic extraction, hot water extraction and pressurized hot water extraction, ethanolic extraction showed the highest extraction yield. The yield of Sri Gemunu ethanolic extract was 6.20 % w/w and yield of Sri Wijaya ethanolic extract was 9.9% w/w. Ethanolic extracts of the two accessions were tested for total phenolic content (20.60 ± 0.01 mg gallic acid eq.g⁻¹ of Sri Gemunu, 6.07 ± 0.01 mg gallic acid eq.g⁻¹ of Sri Wijaya), total flavanoid content (72.02 ± 0.02 mg quercetin eq.g⁻¹ of Sri Gemunu, 23.59 ± 0.02 mg quercetin eq.g⁻¹ of Sri Wijaya), total proanthocyanidin content (0.60 ± 0.05 g catechin eq.g⁻¹ of Sri Gemunu, 0.15 ± 0.05 g catechin eq.g⁻¹ of Sri Wijaya) and DPPH radical scavenging activity ($IC_{50} 58.18 \pm 2.53$ µg/mL of Sri Wijaya, 69.60 ± 5.48 µg/mL of Sri Gemunu). GC-MS analysis and HPLC analysis indicated that both accessions were rich in eugenol and cinnamaldehyde. According to the results of the study, ethanolic extract of leaves of Sri Gemunu *Cinnamomum zeylanicum* accession displayed significant amounts of phytochemicals that are related to the anti-diabetic properties compared to the leaves of Sri Wijaya.

Keywords: *Cinnamomum zeylanicum*, ethanolic extraction, hypoglycaemic, Sri Gemunu accession, Sri Wijaya accession

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