

Poster presentation: 104

## Determination of anti-diabetic properties in *Cinnamomum zeylanicum*

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Diabetes is one of the major complications that millions of individuals in the world faces today. If two key enzymes, the  $\alpha$ -amylase and  $\alpha$ -glucosidase are inhibited, it can lower the possibility to develop diabetes. Synthetic anti-diabetic drugs are associated with various gastrointestinal side effects. Therefore, it is important to identify and explore natural sources that have fewer side effects for managing diabetes. The aim of this study was to evaluate anti-diabetic properties in *Cinnamomum zeylanicum* leaf. The *C. zeylanicum* leaves were collected from a cinnamon cultivation at Waskaduwa area and extracted by pressurized hot water extraction method and Soxhlet extraction method with ethanol. Each extract was tested for flavonoid content, phenolic content, radical scavenging effect and inhibitory potential against  $\alpha$ -amylase and  $\alpha$ -glucosidase enzymes. Flavonoid content was determined by the aluminium chloride colorimetric method and radical scavenging activity was determined using DPPH assay in triplicates.  $\alpha$ -amylase inhibitory activity and  $\alpha$ -glucosidase inhibitory activity were measured in duplicates by starch-iodine method and enzyme-inhibition method based on para-nitrophenyl- $\alpha$ -D-glucopyranoside (pNPG) substrate respectively. The highest content of flavonoids ( $52.23 \pm 3.87$   $\mu$ g Quercetin equivalent /100 g) was present in ethanolic extract. Phenolic content was determined by Folin-Ciocalteu colorimetric method. The highest content of phenolics ( $110.57 \pm 1.71$   $\mu$ g Gallic acid equivalent/g) was observed in water extract. At 1 mg/mL, the highest radical scavenging effect was observed in ethanolic extract ( $66.98\% \pm 2.93$ ) relative to water extract. Both extracts showed inhibitory potential against  $\alpha$ -amylase ( $IC_{50}$  of ethanolic extract 0.0956 mg/mL, water extract 0.4880 mg/mL, Acarbose 0.0536 mg/mL) and  $\alpha$ -glucosidase ( $IC_{50}$  of ethanolic extract 0.1521 mg/mL, water extract 0.8579 mg/mL, Acarbose 0.2593 mg/mL). The extracts of cinnamon leaves contain flavonoids, and phenolic acids and possessed scavenging effect on DPPH. Moreover, these extracts exhibited good inhibitory potential against  $\alpha$ -amylase and  $\alpha$ -glucosidase enzymes. The ethanol extract showed higher activity than successive water extract of *Cinnamomum zeylanicum*. According to these results *Cinnamomum zeylanicum* ethanolic leaf extract shows high amount of anti-diabetic properties than the water extract.

**Keywords:** Anti-diabetic, *Cinnamomum zeylanicum*, hot water extraction, Soxhlet extraction