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**Developing an efficient extraction method for *Cinnamomum zeylanicum*  
(Cinnamon) bark; to develop an antidiabetic nutraceutical**

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Diabetes is a common global disease. It causes mortality and morbidity. Therefore, many synthetic drugs have been introduced. Most of them are alpha amylase and alpha glucosidase inhibitors. But, they cause many side effects. Accordingly, modern researches are focused on plants based bioactive compounds which can inhibit alpha amylase and alpha glucosidase enzymes. *Cinnamomum zeylanicum* is a potential candidate for antidiabetes agent. This research is focused on experimental evaluation of different extracts of *Cinnamomum zeylanicum* which is suitable for human consumption. *Cinnamomum zeylanicum* bark was extracted using water at three different temperatures (room temperature, 40 °C and 90 °C) and using ethyl acetate at room temperature. Alpha amylase inhibitory activities of these extracts were determined by a previously described method. Bioactive compounds (phenolic compounds, proanthocyanidins and cinnamaldehyde) in the extracts were evaluated and correlated with the alpha amylase inhibitory activity. Effect of extraction time duration on efficiency of water extract at room temperature was studied. IC<sub>50</sub> values (concentration of inhibitor that is required for 50% inhibition of enzyme) of three different extracts were determined using alpha amylase inhibitory activity. Water extract at 40 °C temperature had the lowest IC<sub>50</sub> value for alpha amylase (0.301±0.238 mg/mL) followed by highest phenolic content (50.3±0.827 mg GAE/g) and highest proanthocyanidin content (19.0±0.665 mg/g). IC<sub>50</sub> values for alpha amylase of three different extracts decreased with the increment of phenolic and proanthocyanidin content of extracts. Water extract at room temperature showed same changing pattern for proanthocyanidin content, phenolic content and alpha amylase inhibition activity with extraction time. Initially inhibitory activity and amount of bioactive compounds were increased and after three hours they were decreased. Ethyl acetate extract had highest cinnamaldehyde content and cinnamaldehyde content in water extract at room temperature decreased with time. Water extract at 40 °C temperature was the most efficient extraction method among three different extraction methods as it showed the highest alpha amylase inhibitory activity followed by highest phenol and proanthocyanidin content.

**Keywords:** Diabetes, *Cinnamomum zeylanicum* (Ceylon cinnamon), Alpha amylase inhibitory activity

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