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Heat stability of the amylase and lipase inhibitors in methanol extracts of some spices

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Hyperlipidaemia and hyperglycaemia have become serious public health problems, which lead to vascular diseases and diabetes mellitus. Dietary therapy is important and could be considered as the first choice of prophylactic treatment. Decreasing digestion and absorption of dietary lipids and carbohydrates could be beneficial in controlling hyperlipidaemia and hyperglycaemia. Previously, we have reported that some spices which are commonly used as food additives in Sri Lanka show lipase and amylase inhibitory activities. The objective of the present study was to evaluate the heat stability of the lipase and amylase inhibitors of those spices which have previously shown the inhibitory activities. Crude methanolic extracts of seven spices which have shown inhibitory activities in our previous study were used. Inhibitory activities against pancreatic α -amylase and pancreatic lipase were analyzed. Boiling of the extracts was carried out at 100 °C for 20 min. The lipase and amylase inhibitory activities of the boiled and un-boiled extracts were measured *in vitro* and the inhibitory activity that remained after boiling the extracts was expressed as % residual inhibitory activity.

Unboiled extracts of *Trigonella foenum-graecum* (Ulu-Hal), *Cuminum cyminum* (Suduru), *Elettaria cardamomum* (Enasal) and *Coriandrum sativum* (Kotta'malli) demonstrated 25.42 ± 0.32 , 19.17 ± 0.54 , 11.76 ± 0.55 and 6.19 ± 0.15 % inhibition on lipase activity respectively. A significant reduction of the lipase inhibitory activity of the extracts was observed in all four extracts after boiling. Residual lipase inhibitory activities remained after boiling the respective extracts were 38.46%, 57.11%, 73.76% and 63.17% respectively. Further, results show that the stability of lipase inhibitors of four extracts is variable. Un-boiled extracts of *Syzygium aromaticum* (Karabu), *Cinnamomum zeylanicum* (Curundu), *Foeniculum officinalis* (Ma'duru) and *Trigonella foenum-graecum* demonstrated 58.10 ± 0.24 , 32.39 ± 0.91 , 28.79 ± 0.22 and 8.69 ± 0.35 % inhibition, respectively, on α -amylase activity. Boiling of these four extracts, did not cause a major decline in the amylase inhibitory activities. Residual amylase inhibitory activities remained after boiling of the respective extracts were 95.38%, 97.60%, 92.57% and 93.04%, respectively. Our studies revealed that boiling the extracts had no major effect on the activity of α -amylase inhibitors, whereas boiling resulted in a significant decline in the lipase inhibitor activity.