

***In-Vitro* Inhibition of Pancreatic Lipase by the Polyherbal Formula “*Lekhaneeya Dashakaya*”**

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Hyperlipidaemia and obesity are two important modifiable risk factors of cardiovascular diseases which have become the number one cause of death, globally. “*Lekhaneeya Dhashakaya*” (LD) has been described in classical ayurvedic text, Charaka Samhitha as the ten most effective herbs that could be used to treat ailments related to hyperlipidaemia. LD is used as a decoction or tea in ayurvedic practice to treat hyperlipidaemia. A clinical study conducted previously on patients with ischaemic heart disease and obesity, has shown significant antihyperlipidaemic effects of LD. Pancreatic lipase is being used as a target in modulation of blood lipid concentrations. The objective of this study was to determine the potential of LD to inhibit pancreatic lipase *in-vitro* and to compare the effect of different processing methods (herbal tea and decoction) of LD on lipase inhibitory activity.

Polyherbal formula LD was prepared as a powder of dried plant materials (DP) which was used either as herbal tea or decoctions. Aliquots of the decoction were collected at 6/8, 4/8, 2/8 and 1/8 of the initial volume. *In vitro* pancreatic lipase inhibitory activities of the extracts were evaluated using optimum conditions. All experiments were conducted in triplicate on three occasions and percent inhibitions were expressed as mean \pm standard deviation.

Lipase inhibition was observed in all the tested extracts with mean percent inhibitions 35.64 ± 0.87 with herbal tea, 25.21 ± 0.9 , 30.01 ± 1.11 , 45.79 ± 1.23 and 47.95 ± 0.91 with 6/8, 4/8, 2/8 and 1/8 volume extracts of the decoction respectively. It was observed that lipase inhibition increased with the increase of processing time of decoction. However, herbal tea showed a relatively higher inhibition, compared to that of the decoction with similar processing time. This observation may possibly be an indication of a heat labile nature of lipase inhibitor/s present in the LD. Inhibition of pancreatic lipase may be one of the mechanisms which could have contributed to the antihyperlipidaemic effects of LD seen in the clinical study conducted by another group. However, the nature of the inhibitor/s is yet to be studied.

In conclusion, this study shows scientific evidence for *in-vitro* inhibition of pancreatic lipase by LD and that this lipase inhibitory effect depends on the processing method used. However, both processing methods used have shown promising inhibitory potential. Further studies are necessary to identify *in-vivo* effect of LD on lipase activity.