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## INHIBITORY EFFECT ON PANCREATIC AMYLASE OF SOME MEDICINAL PLANTS FROM THE JAFFNA PENINSULA

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Inhibition of pancreatic  $\alpha$ -amylase, an enzyme that plays a role in digestion of starch, is considered a strategy for the treatment of diabetes. Herbal medicines are becoming more important in the treatment of diseases, because of their lesser side effects and low cost. Some medicinal plants are sources of chemical constituents with potential for inhibition of  $\alpha$ -amylase. The objective of the present study was to investigate the inhibitory effect of some medicinal plants collected from the Jaffna peninsula on pancreatic  $\alpha$ -amylase.

Parts of *Artocarpus heterophyllus*, *Cassia auriculata*, *Gymnema lactiferum*, *Momordica charantia*, *Murraya koenigii*, *Salacia reticulata* and *Syzygium cumini* were collected from Jaffna. Plants were identified and voucher samples were deposited at the Herbarium, Royal Botanical Gardens, Peradeniya. Plant parts were rinsed, dried and powdered and extracted with water, 70% ethanol and 95% ethanol separately. Inhibitory activity of  $\alpha$ -amylase of each extract was analyzed using pancreatic  $\alpha$ -amylase and potato starch. Amylase was pre-incubated with the plant extract at 37°C, before adding the substrate. The substrate was added subsequently and the incubation continued. The colour reagent was added and the tube was incubated at 85°C. Absorbance was measured at 540 nm. Appropriate controls and blanks were used. The percentage amylase inhibition of each extract was calculated. All the experiments were conducted in triplicate on three separate occasions.

The highest amylase inhibitions were observed with *Syzygium cumini* leaf (93-95%), *Cassia auriculata* flower (82-94%) and *Momordica charantia* fruit (86-89%) extracts (with all three solvents used). *Murraya koenigii* flower (42-72%), *Cassia auriculata* stem bark (66-90%) and *Salacia reticulata* stem bark (36-49%) showed the maximum inhibitory potential in ethanol extracts. *Artocarpus heterophyllus* leaf, *Cassia auriculata* leaf and *Gymnema lactiferum* leaf did not demonstrate amylase inhibitory activity. Plant parts selected for this study are grown in the Jaffna peninsula and are used in traditional medicine to treat diabetes mellitus. Even though some of the plant parts used in this study have been experimentally proven for its antidiabetic properties *in-vivo*, studies on their amylase inhibitory potential are scarce. Among the ten plant parts selected for this study, six have demonstrated hypoglycaemic potential, through inhibition of  $\alpha$ -amylase ranging from 36-95% *in-vitro*. The inhibitors seem to be polar, heat stable molecules based on the conditions used in the extraction procedure.

In conclusion, *Syzygium cumini* leaf, *Cassia auriculata* flower and stem bark, *Momordica charantia* fruit, *Murraya koenigii* flower and *Salacia reticulata* stem bark demonstrated *in-vitro* amylase inhibitory potential. Further studies are in progress to characterize these inhibitors.