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IN VITRO ANTIOXIDANT AND ANTIHYPERGLYCEMIC ACTIVITIES OF PLANT EXTRACTS OF *Garcinia zeylanica*

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Garcinia zeylanica (*Kaha goraka/Ela goraka*), belongs to the genus *Garcinia*, Family Clusiaceae and is among the five endemic *Garcinia* species in Sri Lanka. It is also a globally endangered plant. This species shows similar morphology to *G. quaesita* (*Rath goraka*). The dried fruits of both species are used in Ayurveda and as a savoury agent in cooking. However, very little attention has been given to *G. zeylanica* compared to the *G. quaesita* in the scientific exploration of biological activities. Hence, we studied the *in vitro* antioxidant and antihyperglycemic activities of the fruits (F), leaves (L) and bark (B) of *G. zeylanica*. Nine crude extracts were obtained by sequential extraction of plant parts with hexane (HX-L, HX-F, HX-B), ethyl acetate (EA-L, EA-F, EA-B) and methanol (MT-L, MT-F, MT-B). The presence of antioxidants in all plant parts was confirmed by qualitative evaluation using the TLC bioautography method, and all nine plant extracts showed the presence of antioxidant compounds in varying degrees. The antioxidant potential was evaluated quantitatively using DPPH radical scavenging assay. The antihyperglycemic activity was evaluated using the α- amylase inhibition assay. Nonpolar extracts showed a very high free radical scavenging ability compared to polar plant extracts, while the MT-B showed a significantly low IC_{50} (13.81 ± 0.13) mg L^{-1} despite being polar. HX-F extract showed very high antioxidant activity (13.53 ± 0.02) mg L^{-1} compared to that of HX-L (46.57 ± 2.93) mg $L^{-1,}$ and HX-B (44.86 ± 0.01) mg L^{-1} extracts, and it also showed a very low IC_{50} with a closer value to the ascorbic acid (7.30 ± 0.75) mg $L^{-1,}$ which is the standard. HX-F showed the lowest IC_{50} value (28.08 ± 1.09) mg L^{-1} in α- amylase inhibition assay indicating very high antihyperglycemic activity compared to the HX-L and HX-B. These empirical data showed that there is significant antioxidant activity and antihyperglycemic activity in *G. zeylanica*.

Keywords: α-amylase, Bioactivities, DPPH assay, *Garcinia zeylanica*