

Evaluation of antioxidant and antidiabetic activities of Megha Vac Recovery and Megha Primal Intake:
An *in vitro* study for newly formulated herbal-based food supplements

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Megha Vac Recovery (MVR) and Megha Primal Intake (MPI), herbal-based food supplements, have recently been introduced to bolster the immune system and provide enhanced health benefits. They contain Ginger, Garlic, Coriander, Sweet Flag, Malabar Nut, and Holy Basil, with Cocoa in MVR. This investigation evaluates the antioxidant and antidiabetic properties of the water (WE) and ethanol (EE) extracts of MVR and MPI capsules. The extracts were analyzed for total phenolic and flavonoid contents, as well as antioxidant and antidiabetic activities. MVR demonstrated a higher ($p < 0.05$) total phenolic content of 1.84 ± 0.19 mg/g (gallic acid equivalents, GAE) in WE, along with a total flavonoid content of 4.26 ± 0.09 mg/g (catechin equivalents, CE). In contrast, MPI exhibited 1.28 ± 0.07 mg/g GAE of phenolics and 3.0 ± 0.13 mg/g CE of flavonoids. Compared to the positive control, ascorbic acid, the WE of both capsules displayed moderate antioxidant activity, with IC_{50} values of 6.33 ± 0.35 μ g/mL for MVR and 7.67 ± 0.58 μ g/mL for MPI in the DPPH (2,2-diphenyl-1-picrylhydrazyl) assay, while EE showed lower activity. In the ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid)) assay, both capsules showed moderate effectiveness in scavenging ABTS radicals. In the FRAP (Ferric Reducing Antioxidant Power) assay, EE showed higher

reducing power than WE. The WE of MVR showed potent antidiabetic activity with an IC_{50} of 12.62 ± 1.11 μ g/mL in the α -amylase inhibition assay. Compared to acarbose (17.18 ± 0.26 μ g/mL), the positive control, WE of MPI, and EE of both capsules exhibited higher IC_{50} values, indicating moderate α -amylase inhibitory activity. In the α -glucosidase inhibition assay, WE of MVR (71.59 ± 2.65 μ g/mL) and EE of MPI (44.90 ± 2.64 μ g/mL) showed lower IC_{50} values than acarbose (153.48 ± 3.81 μ g/mL), indicating stronger α -glucosidase inhibition. These findings indicate that MVR and MPI possess moderate antioxidant activity and notable antidiabetic potential. Among them, MVR with higher phenolics showed greater potential to inhibit α -amylase and α -glucosidase, thereby delaying carbohydrate digestion.

Keywords:

Herbal food supplement; Natural products; Megha Vac Recovery; Megha Primal Intake

Acknowledgement:

This research is funded by Megha Palace (Pvt) Ltd, Colombo, Sri Lanka.