

Physiology-Gastrointestinal and Liver Physiology 290(2), G199-G203.

3. Shah, F., Kazi, T. G., Afridi, H. I., Kazi, N., Baig, J. A., Shah, A. Q., Khan, S., Kolachi, N. F., Wadhwa, S. K., 2011, *Biological trace element research*, 141 (1-3), 131-149.

4. Amartey, E., Asumadu-Sakyi, A., Adjei, C., Quashie, F., Duodu, G., Bentil, N., 2011, *J. Pharmacol Toxicol*, 2, 192-198.

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***In vitro* antioxidant, antiglycation and α -glucosidase inhibitory activities of the ethyl acetate soluble fraction of water extract of *Artocarpus heterophyllus* Lam. leaves**

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Artocarpus heterophyllus Lam. commonly known as jackfruit belongs to the family Moraceae. Diabetes mellitus is a global health problem where every seven seconds one person dies and 11% of worldwide healthcare expenditure is used to treat diabetes and its complications.¹ In traditional medicine of Sri Lanka the water extract of *A. heterophyllus* senescent leaves is used to reduce the blood sugar level. This extract has been shown to significantly lower the fasting blood sugar level and markedly improved glucose tolerance in Sprague-Dawley rats as well as normal human subjects and diabetic patients.^{2,3} The ethyl acetate soluble fraction of the water extract of senescent leaves of *A. heterophyllus* (named as EA/W) has been shown to possess higher hypoglycemic greater than that of tolbutamide, a sulphonyl urea drug commonly used for treatment of hyperglycemia.⁴

In this study the EA/W was tested for its *in vitro* antioxidant activity, antiglycation activity and α -glucosidase inhibitory activity. The EA/W was tested for its antioxidant activity using 2,2-Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay, the antiglycation activity using Bovine Serum Albumin (BSA) – methylglyoxal (MGO) fluorescent based assay and α -glucosidase inhibitory activity using α -glucosidase enzyme inhibition assay⁵.

In the DPPH radical scavenging activity EA/W showed moderate radical scavenging activity with an IC₅₀ value of 29.3 ± 0.7 µg/mL while gallic acid had an

IC₅₀ value of 23.5 ± 0.4 µg/mL. In the α -glucosidase inhibition assay EA/W showed an IC₅₀ value of 1.9 ± 0.6 µg/mL while the standard drug acarbose showed an IC₅₀ value of 0.5 ± 0.01 µg/mL. The antiglycation activity was low, giving an inhibition of 44% at 0.5 mg/mL, compared with the standard rutin gave an inhibition of 85% in 1 mM (0.6 mg/mL).

These results indicate that the hypoglycemic activity of *A. heterophyllus* senescent leaves, may be partly due to α -glucosidase inhibiting activity. Further its antioxidant activity and antiglycation activity (even though lower than rutin) may contribute to reducing the complication arising due to diabetes mellitus.

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References

1. International Diabetes Federation, Diabetes Atlas. 6th edition. Brussels: Available at www.idf.org/diabetesatlas (2013)
2. Fernando M. R., Thabrew, M. I. and Karunanayake, E. H., 1990, *General Pharmacology*, 21, 779-782.
3. Fernando M. R., Wickramasinghe, S. M. D. N., Thabrew, M. I., Ariyananda, P. L. & Karunanayake E. H., 1991, *Journal of Ethnopharmacology*, 81, 277-282.