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In vitro evaluation of antidiabetic activity of the methanolic extract of the seed of *Vateria copallifera***Athapattu AWMAK^{1*}, Rathnayake GWSL¹, Prasadi HLT¹, Sivasinthujah S²**¹Department of Pharmacy, Faculty of Allied Health Sciences, University of Jaffna, Sri Lanka.

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Introduction & Objectives: *Vateria copallifera alston* is one of the endemic plants in Sri Lanka and is reported to have larvicidal, antioxidant and antibacterial activities. Ayurveda uses the plant's seeds to treat diabetes mellitus. Because of this medicinal value and the fact that no study investigated the antidiabetic property of the seed, this study focuses on evaluating the antidiabetic activity of the methanolic seed extract. Seeds were collected in Kalutara, Sri Lanka.

Materials & Methods: Seeds were dried, powdered, and macerated in methanol to obtain the methanolic extract. The antidiabetic potential was evaluated by the α -amylase and α -glucosidase inhibitory assay using acarbose as standard. Total phenolic content was evaluated using gallic acid as the standard. Qualitative phytochemical screening was performed on crude methanol extracts. All experiments were performed in triplicate and reported as mean $\pm$ standard deviation. Results were analyzed using one-way ANOVA and Tukey's post hoc test ($p < 0.05$) in SPSS23.

Results: The methanolic extraction of seeds produced an extraction yielded of 16.77%. Regarding the α -amylase inhibition, acarbose exhibited the strongest inhibitory effect (IC_{50} : $145.3629 \pm 4.12 \mu\text{g/ml}$), while *V. copallifera* seed extract exhibited moderate inhibitory activity (IC_{50} : $3046.180 \pm 1025.67 \mu\text{g/mL}$). Regarding α -glucosidase inhibition, acarbose exhibited the strongest inhibitory effect (IC_{50} : $211.98 \pm 1.16 \mu\text{g/mL}$), while the seed extract exhibited (IC_{50} : $318.04 \pm 0.947 \mu\text{g/mL}$). The total phenolic compound of the seeds was $59.39 \pm 1.08 \text{ mg GAE/g extract}$. Statistical analysis showed that the IC_{50} values of seed extract for both α -amylase and α -glucosidase differed significantly from those of acarbose ($p < 0.05$). The qualitative phytochemical analysis confirmed the presence of alkaloids, flavonoids, saponins, tannins, gum mucilage and glycosides.

Conclusions: This study provides first evidence that *V. copallifera* seed extract has antidiabetic activity, supporting its Ayurvedic use. It showed potent α -glucosidase inhibition, but weaker α -amylase inhibition. This activity likely stems from high phenolic content and phytochemicals. Further isolation and in vivo studies are warranted

Keywords: *Vateria copallifera*, antidiabetic activity, α -amylase inhibition, α -glucosidase inhibition, total phenolic content.