

**IN VITRO ANTIOXIDANT POTENTIAL AND ALPHA AMYLASE
INHIBITION OF SEEDS AND SPROUTS OF *Trigonella foenum-graecum***K. Kamshana¹, S. Sivasinthujah¹ and S. Thuvaragan^{1*}¹Department of Pharmacy, Faculty of Allied Health Sciences, University of Jaffna, Sri Lanka**Abstract**

The seeds of *Trigonella foenum-graecum*, commonly known as fenugreek, have been used in various medicinal systems due to their diverse pharmacological properties, including antioxidant, antidiabetic and anticancer activities. This study aimed to evaluate the *in vitro* antioxidant and alpha-amylase inhibitory activities of methanolic extracts of seeds and sprouts (Day 1, Day 3 and Day 5) of *T. foenum-graecum*. Seeds and sprouts were dried, powdered, and macerated in methanol to obtain the methanolic extract. The antioxidant activity was assessed using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay and phosphomolybdenum method using ascorbic acid as standard. The antidiabetic potential was evaluated by the alpha-amylase inhibitory assay using acarbose as standard. Qualitative phytochemical screening was performed on the crude methanol extracts. DPPH assay revealed the lowest half maximal inhibitory concentration (IC₅₀) for Day 3 sprout extract (22.67 µg/ml) whereas the IC₅₀ of ascorbic acid was 12.4 µg/ml, indicating the highest antioxidant capacity. In the phosphomolybdenum method, the Day 3 sprout extract exhibited the highest antioxidant activity, followed by Day 1, dry seeds, and Day 5 sprouts extracts. Regarding alpha-amylase inhibition, the dry seed extract exhibited the highest inhibitory activity (IC₅₀ = 104.56 µg/ml), whereas IC₅₀ of acarbose was 829.03 µg/ml, followed by Day 1 and Day 3 sprout extracts. The qualitative phytochemical analysis confirmed the presence of alkaloids, flavonoids, saponins, tannins, gum, mucilage, sterols, glycosides, and phenolic compounds in the extracts. The Day 3 sprout extract exhibited the highest antioxidant activity, while the dry seed extract showed the highest alpha-amylase inhibition. The findings suggest that *T. foenum-graecum* sprouts, particularly on Day 3, could be beneficial in managing diabetes and its complications. Further, methanol extract of *T. foenum-graecum* could be used to identify the specific antidiabetic compounds with antioxidant activity, providing further insight into their therapeutic potential.

Keywords: Alpha amylase inhibition, Antioxidant activity, Seeds, Sprouts, *Trigonella foenum-graecum*

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