

## ***In-vitro* $\alpha$ -Amylase Inhibitory Activity of *Evolvulus alsinoides* (L.) L. Extracts**

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**Background:** *Evolvulus alsinoides* (L.) L. commonly known as 'Nil Vishnukranthi' is known for its dietary enzyme inhibitory activity. It is a widely used medicinal herb in ayurvedic preparations, and reported to be effective against neurodegeneration, gastroprotection and diabetes. The quantitative analysis of the plant phytoconstituents has reported the presence of alkaloids, polyphenols, saponins, tannins and flavonoids and aqueous extract possessed significant antacid potential.

**Objectives:** To evaluate  $\alpha$ -amylase enzyme inhibition of aqueous (AqE), ethanolic (EE) and hexane (HE) extracts of *E. alsinoides*

**Methods:** AqE, EE and HE were obtained by reflux method using dried whole plant powder. Solutions of 100 mg/mL preliminary screening concentrations were prepared by dissolving concentrated *E. alsinoides* extracts in sodium acetate buffer separately. In a microplate, samples with 40 $\mu$ L of the 0.1% starch solution and 120 $\mu$ L of *E. alsinoides* extract (n=3) were pre-incubated at 37°C for 10 minutes. To each well, 40 $\mu$ L of 500 $\mu$ g/mL  $\alpha$ -amylase enzyme (from bacterial source) was added and incubated at 37°C for 10 minutes. A volume of 100 $\mu$ L di-nitrosalysilic acid (DNS) reagent was added to the reaction mixture and heated in a water bath at 90°C. The absorbance was measured at 540nm. A blank with starch replaced by buffer and a control with plant extract replaced by buffer were carried out. Acarbose was used as the standard. Statistical analysis was carried out with one-way ANOVA using SPSS.

**Results:** AqE, EE and HE extracts of *E. alsinoides* exhibited percentage inhibitions of 62.35( $\pm$ 6.1)%, 17.66( $\pm$ 8.7)%, 76.71( $\pm$ 1.8)%, respectively. The standard (Acarbose) exhibited 50% inhibition at 140.62( $\pm$ 2.4) $\mu$ g/mL concentration.

**Conclusions:** Aqueous and hexane extracts of *E. alsinoides* possessed significant ( $p$ <0.001) amylase enzyme inhibitory activity compared to deionized water. However, ethanolic extract did not exhibit significant activity ( $p$ <0.05).

**Keywords:**  $\alpha$ -Amylase inhibitory activity, Antidiabetic, *Evolvulus alsinoides*

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