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## Insight into acetylcholinesterase inhibitory and antioxidant activity of *Eryngium foetidum* L. leaves

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Acetylcholinesterase inhibitory (AChEi) and antioxidant activities of natural sources are explored in the treatment of Alzheimer's disease (AD). *Eryngium foetidum* L. (Apiaceae) "Andhu" is used as a traditional culinary and a medicine globally. The objective of this study was to determine the AChEi and antioxidant activities of ethanol extract of *E. foetidum* leaves. Plant material was extracted using ethanol by cold extraction technique. AChEi and antioxidant activities were determined according to Ellman's method and 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging, Ferrous Iron Chelating Activity (FICA), Ferric Reducing Antioxidant Potential (FRAP) and Oxygen Radical Absorbance Capacity (ORAC) assays, respectively. Total phenolic and flavonoid contents were determined. Assays were carried out in triplicates using Spectra Max microplate-reader. The leaf extract showed moderate AChEi activity ( $IC_{50}$   $243.65 \pm 5.24$   $\mu\text{g/mL}$ ) in comparison to Galanthamine, ( $IC_{50}$   $0.14$   $\mu\text{g/mL}$ ), moderate DPPH radical scavenging activity ( $IC_{50}$   $737.94 \pm 19.29$   $\mu\text{g/mL}$ ) in comparison to Trolox ( $IC_{50}$   $4.6 \pm 0.0$   $\mu\text{g/mL}$ ), lower FICA ( $IC_{50}$   $1395.88 \pm 43.77$   $\mu\text{g/mL}$ ) in comparison to EDTA ( $12.74 \pm 0.21$   $\mu\text{g/mL}$ ), low reducing power ( $62.73 \pm 1.83$  mg TE/gram of extract) and ORAC ( $53.74 \pm 0.15$  mg TE/g of extract) in comparison to green tea ( $IC_{50}$   $1362.82 \pm 0.22$  mg TE/g). The total phenolic and flavonoid content was found to be  $10.19 \pm 0.07$  GAE/g of extract and  $26.39 \pm 0.34$  QE/g of extract respectively. This is the first report of *in-vitro* AChEi, FICA and ORAC activity for the ethanolic leaf extract of *E. foetidum*. Results exhibit relatively moderate AChEi and antioxidant properties for the ethanol extract of *Eryngium foetidum* leaves. Further studies are required on biological activity.

**Key words:** *E. foetidum*, Acetylcholinesterase, Antioxidant

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