

## **Antioxidant and anti-inflammatory properties of *Erythroxylum cuneatum* alkaloid leaf extract**

### **ABSTRACT**

*Erythroxylum cuneatum* (*E. cuneatum*) which belongs to Erythroxylaceae family is a tropical flowering plant from the genus of *Erythroxylum*. It is used in Malaysia and Thailand's traditional medicines, yet there is limited scientific reports on its medicinal value. This study aimed at exploring the antioxidative and anti-inflammatory properties of *E. cuneatum* alkaloid leaf extract. The alkaloid extract was obtained through Soxhlet heat extraction method, while the antioxidative properties were assessed via 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging, ferric reducing antioxidant power (FRAP) and xanthine oxidase inhibition (XOI) assays. Further, anti-inflammatory property of the extract was evaluated on rat's model of carrageenan induced paw model of edema via physical measurements and histology. The extract exhibited antioxidant activity with an EC<sub>50</sub> value of 1482 µg/ml in the DPPH radical scavenging assay, an EC<sub>1</sub> value of 2191 µg/ml in the FRAP assay and 10.15 ± 6.20% in the XOI assay. Rats pretreated with the extract have shown dose dependent decrease in paw edema when compared to non-treated group of rats. The highest dose (50 mg/kg) of extract exhibited similar effects to aspirin in terms of reducing paw thickness, leucocytes infiltration and disruption of collagen. In conclusion, the *E. cuneatum* alkaloid leaf extract possesses both antioxidative and anti-inflammatory properties suggesting its potentials for future development of antioxidant and anti-inflammatory drugs.

**Keyword:** Alkaloid extraction; *Erythroxylum cuneatum*; Antioxidant; Anti-inflammatory; Carrageenan induced edema; Physiology; Anatomy; Pharmacology; Alternative medicine; Evidence-based medicine