

## Antinociceptive activity of aqueous extract of the stem of *Vernonia zeylanica* (L.) Less. in rats

S K J S Peiris<sup>1</sup>, W D Ratnasooriya<sup>2</sup> and S A Daraniyagala<sup>1\*</sup>

<sup>1</sup>Department of Chemistry, University of Colombo, Colombo 3

<sup>2</sup>Department of Zoology, University of Colombo, Colombo 3

*Vernonia zeylanica* (L.) Less. (Family: Asteraceae; Sinhala: Pupula; Tamil: Kuppilay) is an endemic shrub in Sri Lanka. In Ayurvedic medicine, this is recommended to be used in the treatment of fractures of bones. This suggests that it may have pain relieving properties. But, as yet this has not been scientifically tested. This study was carried out to investigate the antinociceptive potential of aqueous extract of the stem of *V. zeylanica*.

The water extract was prepared by refluxing macerated stem in distilled water for 2 days. Different doses of extract (AE) (750, 1000, 1500 mg/kg ; n=8/group) or vehicle (1ml distilled water) were orally administered to male rats and the analgesic potential evaluated using two models of nociception (hot plate and tail flick tests).

A considerable antinociceptive activity was evident in the hotplate test but not in tail flick test. The 1500 mg/kg dose had the highest activity (in terms of prolongation of hot plate reaction time) compared to the control. AE had a rapid onset of action (within 1h). AE showed no harmful side effects or toxicity following subchronic administration and when tested in brine shrimp lethality assay. The antinociceptive action was mediated centrally at supraspinal level. The AE also suppressed the number of paw lickings and the time spent on paw licking in the formalin test at both phases indicating that the AE also has peripherally mediated antinociceptive action. Pretreatment with naloxone significantly reduced the reaction time induced by 1500 mg/kg of extract in the hot plate test indicating that the activity was mediated via opioid mechanisms.

In the hole board test number of crossings, rearings and head drippings were significantly reduced by the AE indicating sedative activity. Also AE had mild antioxidant activity (judged by TBARS method). The sedation and mild antioxidant activity of the AE could have played a supporting role in inducing antinociception.

Phytochemical studies and chemical analysis of the AE showed the presence of alkaloids, steroids, triterpenoids, flavonoids and polyphenolic constituents.

The AE induced inhibition of pain could arise from the presence of opioids and/or opioidomimetics (which could be alkaloid constituents) that were found in the AE, as well as from the presence of phenolic constituents and/or steroidal constituents which were shown to be present in the extract.

In conclusion, this study shows that the aqueous extract of *V. zealanica* stem has orally safe antinociceptive action.

\* SD@chem.cmb.ac.lk

Tel: 011-2503367