

ABSTRACT

Electrophysiological and Behavioural Effects of a Steroidal Extract of Neem (*Azadirachta indica*) Leaves in Rats**Karen Andrea Thaxter**

Electrophysiological and behavioural effects of a steroidal extract of neem (*Azadirachta indica*) leaves were investigated in rats, using somatosensory evoked potentials (SEPs) and the elevated X maze.

For SEP studies, urethane anaesthetised rats were given intraperitoneal injections of the neem leaf steroidal extract (0.07 mg/kg or 7 mg/kg body weight) or the vehicle (1% DMSO/saline) or diazepam (1 mg/kg body weight). Four hours of intracortical SEP recordings revealed a dose-related increase in the relative amplitude of wave N1 in rats treated with 7 mg/kg neem, and a contrasting potentiation of the anaesthetic effects, by 0.07 mg/kg neem. There was a decrease in the relative amplitude of wave N1, representing potentiation of anaesthetic depression, in diazepam treated rats.

One hour prior to exposure to the elevated X maze, rats received an intraperitoneal injection of neem leaf steroidal extract (0.07 or 7 mg/kg body weight), the vehicle, diazepam (2 mg/kg) or a sham injection. Decreases in open arm measures indicated anxiogenesis, whereas a decrease in percent 'protected' stretched-attend postures (ethological measures) indicated anxiolysis, after treatment with 7 mg/kg neem. The paradigm fully verified the robust anxiolytic effects of diazepam. Treatment with 0.07 mg/kg neem extract produced a relative increase in open arm entries, while reducing percent protected stretched-attend postures, to produce a consistent anxiolytic profile. Neem treatment, at either dose, had no effect on closed arm entries, while increasing rearing in rats.

These results suggest that 7 mg/kg neem has cortical stimulatory and anxiogenic/non-specific effects, whereas 0.07 mg/kg neem treatment reduced anxiety. Neither treatment was found to affect locomotor ability. Possible mechanisms of neem action are discussed.

Keywords: Karen Thaxter, *Azadirachta indica*, Somatosensory evoked potential, elevated x-maze, central nervous system