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Antinociceptive properties of hydro alcoholic extracts of *Anethum graveolens* L. (dill) seed and aerial parts in mice

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Chronic pain and its treatment have always posed a significant challenge for medical practitioners and many attempts have been made to reduce and eliminate it, both in past and recent history. Research to discover new effective drugs with excellent safety profiles is ongoing. The aim of this study was to evaluate the suitability of the plant *Anethum graveolens* (dill) for use as an analgesic drug.

Forty-two mice were divided randomly into seven groups (n=6). In the formalin test, the first group received normal saline; the second group, extract of plant seed (300 mg/kg); the third group, extract of plant crops (300 mg/kg) and the forth group received morphine (1 mg/kg). For the hot plate test, the first group received normal saline; the second group, extract of plant seed (300 mg/kg) and the third group received extract of plant crops (300 mg/kg). All injections consisted of 0.5 ml given intraperitoneally.

In the early phase of formalin test, the animals treated with seed and crop extracts did not show analgesic effects compared to control group (P=0.386, P=0.284 respectively). In contrast, in the late phase of formalin test, seed and crop extracts significantly decreased indications of pain compared to the saline group with seed extracts showing stronger analgesic effects (P=0.004, P=0.023 respectively). In the hot plate test, crop and seed extracts showed hyperalgesic properties. This effect was stronger in animals treated with crop extracts as compared to seed extracts.

These findings indicate that *Anethum graveolens* can reduce inflammatory pain, probably by inhibiting inflammatory mediators. In contrast, this plant has no analgesic effects on spinal nociception and conversely may exacerbate it. This study provides a basis for the use of *Anethum graveolens* extracts in popular folk medicine, but further studies are necessary to elucidate the mechanism of its analgesic actions.

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