Evaluation of antinociceptive profile of chalcone derivative (3-(2,5-dimethoxyphenyl)-1-(5-methylfuran-2-yl) prop-2-en-1-one (DMPF-1) *in vivo*

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ABSTRACT

Introduction: Pain is a major global health issue, where its pharmacotherapy prompts unwanted side effects; hence, the development of effective alternative compounds from natural derivatives with lesser side effects is clinically needed. Chalcone; the precursors of flavonoid, and its derivatives have been widely investigated due to its pharmacological properties. **Objective:** This study addressed the therapeutic effect of 3- (2,5-dimethoxyphenyl)-1-(5-methyl furan-2-yl) prop-2-en-1-one (DMPF-1); synthetic chalcone derivative, on antinociceptive activity *in vivo***Materials and Methods:** The antinociceptive profile was evaluated using acetic-acid-induced abdominal writhing, hot plate, and formalin-induced paw licking test. Capsaicin, phorbol 12-myristate 12 acetate (PMA), and glutamate-induced paw licking test were carried out to evaluate their potential effects toward different targets. **Results:** It was shown that the doses of 0.1, 0.5, 1, and 5 mg/kg of DMPF-1 given via intraperitoneal injection showed significant reduction in writhing responses and increased the latency time in hot-plate test where reduced time spent on licking the injected paw in formalin and dose contingency inhibition was observed. The similar results were observed in capsaicin, PMA, and glutamate-induced paw licking test. In addition, the challenge with nonselective opioid receptor antagonist (naloxone) aimed to evaluate the involvement of the opioidergic system, which showed no reversion in analgesic profile in formalin and hot-plate test. **Conclusion:** Collectively, this study showed that DMPF-1 markedly inhibits both peripheral and central nociception through the mechanism involving an interaction with vanilloid and glutamatergic system regardless of the activation of the opioidergic system.

KEYWORDS

3-(2,-dimethoxyphenyl)-1-(5-methylfuran-2-yl) prop-2-en-1-one; Abdominal writhing; Antinociceptive; Chalcone; Glutamatergic; Hot plate; Opioidergic; Transient protein vanilloid-1

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