Cardamonin attenuates hyperalgesia and allodynia in a mouse model of chronic constriction injury-induced neuropathic pain: possible involvement of the opioid system

ABSTRACT

Neuropathic pain arises from the injury of nervous system. The condition is extremely difficult to be treated due to the ineffectiveness and presence of various adverse effects of the currently available drugs. In the present study, we investigated the antiallodynic and antihyperlagesic properties of cardamonin, a naturally occurring chalcone in chronic constriction injury (CCI)-induced neuropathic pain mice model. Our findings showed that single and repeated dose of intra-peritoneal administration of cardamonin (3, 10, 30 mg/kg) significantly inhibited ($P<0.001$) the chronic constriction injury-induced neuropathic pain using the Hargreaves plantar test, Randall-Selitto analgesiometer test, dynamic plantar anesthesiometer test and the cold plate test in comparison with the positive control drug used (amitriptyline hydrochloride, 20 mg/kg, i.p.). Pre-treatment with naloxone hydrochloride (1 mg/kg, i.p.) and naloxone methiodide (1 mg/kg, s.c) significantly reversed the antiallodynic and antihyperalgesic effects of cardamonin in dynamic plantar anesthesiometer test and Hargreaves plantar test, respectively. In conclusion, the current findings demonstrated novel antiallodynic and antihyperalgesic effects of cardamonin through the activation of the opioidergic system both peripherally and centrally and may prove to be a potent lead compound for the development of neuropathic pain drugs in the future.

Keyword: Cardamonin; Hyperalgesia; Allodynia; CCI; Neuropathic pain