Antinociceptive effects of cardamonin in mice: Possible involvement of TRPV1, glutamate and opioid receptors

ABSTRACT

Pain is one of the most common cause for hospital visits. It plays an important role in inflammation and serves as a warning sign to avoid further injury. Analgesics are used to manage pain and provide comfort to patients. However, prolonged usage of pain treatments like opioids and NSAIDs are accompanied with undesirable side effects. Therefore, research to identify novel compounds that produce analgesia with lesser side effects are necessary. The present study investigated the antinociceptive potentials of a natural compound, cardamonin, isolated from Boesenbergia rotunda (L) Mansf. using chemical and thermal models of nociception. Our findings showed that intraperitoneal and oral administration of cardamonin (0.3, 1, 3, and 10 mg/kg) produced significant and dose-dependent inhibition of pain in abdominal writhing responses induced by acetic acid. The present study also demonstrated that cardamonin produced significant analgesia in formalin-, capsaicin-, and glutamate-induced paw licking tests. In the thermal-induced nociception model, cardamonin exhibited significant increase in response latency time of animals subjected to hot-plate thermal stimuli. The rota-rod assessment confirmed that the antinociceptive activities elicited by cardamonin was not related to muscle relaxant or sedative effects of the compound. In conclusion, the present findings showed that cardamonin exerted significant peripheral and central antinociception through chemical- and thermal-induced nociception in mice through the involvement of TRPV1, glutamate, and opioid receptors.

Keyword: Cardamonin; Antinociceptive; TRPV1; Glutamate; Opioid