Antinociceptive activity of Asiaticoside in mouse models of induced nociception

ABSTRACT

The antinociceptive property of Centella asiatica extracts is known but the analgesic activity of its bioactive constituent asiaticoside has not been reported. We evaluated the antinociceptive activity of orally (p. o.) administered asiaticoside (1, 3, 5, and 10 mg/kg) in mice using the 0.6% acetic acid-induced writhing test, the 2.5% formalin-induced paw licking test, and the hot plate test. The capsaicin- and glutamate-induced paw licking tests were employed to evaluate the involvement of the vanilloid and glutamatergic systems, respectively. Asiaticoside (3, 5, and 10 mg/kg, p. o.) reduced the rate of writhing ($p < 0.0001$) by 25.3, 47.8, and 53.9%, respectively, and increased the latency period ($p < 0.05$) on the hot plate at 60 min post-treatment until the end of the experiment. Moreover, asiaticoside (3, 5, and 10 mg/kg, p. o.) shortened the time spent in licking/biting the injected paw ($p < 0.0001$) in the early phase of the formalin test by 45.7, 51.4, and 52.7%, respectively, and in the late phase ($p < 0.01$) by 23.6, 40.5, and 50.6%, respectively. Antinociception induced by asiaticoside (10 mg/kg) was not antagonized by naloxone in both the 2.5% formalin-induced nociception and the hot plate test, indicating a nonparticipation of the opioidergic system. Asiaticoside (1, 3, 5, and 10 mg/kg, p. o.) reduced the duration of biting/licking the capsaicin-injected paw ($p < 0.0001$) by 40.5, 48.2, 59.5, and 63.5%, respectively. Moreover, asiaticoside (5 and 10 mg/kg) shortened the time spent in biting/licking the glutamate-injected paw ($p < 0.01$) by 29.9 and 48.6%, respectively. Therefore, asiaticoside (5 and 10 mg/kg, p. o.) induces antinociception possibly through the vanilloid and glutamatergic systems.

Keyword: Apiaceae; Centella asiatica; Asiaticoside; Antinociception; Mouse