

Boesenbergia rotunda ethanolic extract inhibits compound action potentials via opioid receptors

ABSTRACT

Boesenbergia rotunda, traditionally used to relieve stomach, abdomen, joint, muscle, and rheumatic pain was also reported for its antinociceptive effect on a mouse model. However, the possible pain relief effect of Boesenbergia rotunda ethanolic extract (BREE) via the inhibition to the neural pain pathway remains to be elucidated. This study investigated the inhibitory effect of BREE on compound action potentials (CAPs) and the possible involvement of the opioid receptors. The changes in the CAPs amplitudes of the frog's sciatic nerves were evaluated following the exposure to three different dosages of BREE (1, 3 and 10 mg/ml and morphine (3 mg/ml). In another set of experiment, the nerves were pretreated with a non-selective opioid receptor antagonist, naloxone (0.1 mg/ml), before exposing the nerve to BREE (1 mg/ml) to investigate the involvement of opioid receptors in the CAPs inhibitory mechanism. The outcome showed a reduction in the CAPs amplitudes when treated with BREE (1, 3 and 10 mg/ml) whereby the effect was reversible. The CAPs inhibition by BREE was absent when the opioid receptors were blocked. Taken together, these findings suggest that BREE-induced CAPs amplitude reduction involves the activation of opioid receptors.

Keyword: Boesenbergia rotunda; Compound action potential; Opioid receptors; Frog sciatic nerve