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Cardamonin (2′,4′-dihydroxy-6′-methoxychalcone) isolated from *Boesenbergia rotunda* (L.) Mansf. inhibits CFA-induced rheumatoid arthritis in rats

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ABSTRACT

Boesenbergia rotunda (L.) Mansf. had been traditionally used as herbs to treat pain and rheumatism. Cardamonin (2′,4′-dihydroxy-6′-methoxychalcone) is a compound isolated from *Boesenbergia rotunda* (L.) Mansf.. Previous study had shown the potential of cardamonin in inhibiting the release of pro-inflammatory cytokines such as tumour necrosis factor-α (TNF-α), interleukin-1β (IL-1β), and interleukin-6 (IL-6) in vitro. Thus, the possible therapeutic effect of cardamonin in the rheumatoid arthritis (RA) joints is postulated. This study was performed to investigate the anti-arthritic properties of cardamonin in rat model of induced RA, particularly on the inflammatory and pain response of RA. Rheumatoid arthritis paw inflammation was induced by intraplantar (i.pl.) injection of complete Freund's adjuvant (CFA) in *Sprague Dawley* rats. Using four doses of cardamonin (0.625, 1.25, 2.5, and 5.0 mg/kg), anti-arthritic activity was evaluated through the paw edema, mechanical allodynia and thermal hyperalgesia responses. Enzyme-linked immunosorbent assay (ELISA) was carried out to evaluate the plasma level of TNF-α, IL-1β, and IL-6. Histological slides were prepared from the harvested rat paws to observe the arthritic changes in the joints. Behavioral, biochemical, and histological studies showed that cardamonin demonstrated significant inhibition on RA-induced inflammatory and pain responses as well as progression of joint destruction in rats. ELISA results showed that there was significant inhibition in TNF-α, IL-1β, and IL-6 levels in plasma of the cardamonin-treated RA rats. Overall, cardamonin possesses potential anti-arthritic properties in CFA-induced RA rat model.