

Anti-Arthritic and Anti Hyperalgesic Effects of Methanolic Extract of Leaves of *Blumea balsamifera* on Complete Freund's Adjuvant (CFA) – Induced Arthritic Rat Models

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ABSTRACT

Rheumatoid arthritis (RA) is one of the common types of chronic inflammatory disease. *Blumea balsamifera* (BB) is a medicinal plant that grows in regions in Southeast Asia which possesses high medical value according to the folklore medicines. It is believed to have anti-rheumatoid effect in Chinese Medicine aspect. Nevertheless, no scientific studies of anti-arthritic effect of BB have been reported yet. The objective of this study is to preliminary elucidating the anti-arthritic and anti-hyperalgesic effects of leaves of *Blumea balsamifera* methanolic extract (BBME) on Complete Freund's Adjuvant (CFA)-induced arthritic rat models. CFA was injected on right hind paw of rat while normal saline was injected on left hind paw as internal control. Administration of 2% Tween 80(negative control), 50mg/kg, 100mg/kg and 200mg/kg of BBME, and 5mg/kg of Diclofenac sodium(positive control) were orally feed to rats for 14 days continuously after CFA injection. Paw volume and paw withdrawal latency were investigated throughout these 14 days. Results have shown that BBME possessed strong anti-arthritic effect and potential anti-hyperalgesic effect on CFA-induced arthritic rat models. In anti-arthritic effect, treatment of BBME was dose-dependent related. BBME in dosage 100mg/kg and 200mg/kg had comparable anti-arthritic effect with Diclofenac sodium, which is a commercial NSAID that commonly prescribed for initial stage of RA patients. In anti-hyperalgesic effect, all BBME had enhanced the paw thermal hypersensitivity, without dose-dependent relationship. As CFA induced both acute and sub-chronic inflammation phase, BBME was proved to have anti-acute inflammatory and anti-sub-chronic inflammatory effects in this study. Previous studies revealed that pro-inflammatory cytokines are the key roles in pathogenesis of RA and inflammatory pain. Therefore, all these results may be related to the suppression or alteration of cytokines production in synovial inflammation.