

A curcumin derivative, 2,6-bis(2,5-dimethoxybenzylidene)-cyclohexanone (BDMC33) attenuates prostaglandin E2 synthesis via selective suppression of cyclooxygenase-2 in IFN- γ /LPS-stimulated macrophages..

ABSTRACT

Our preliminary screening had shown that the curcumin derivative [2,6-bis(2,5-dimethoxybenzylidene)cyclohexanone] or BDMC33 exhibited improved anti-inflammatory activity by inhibiting nitric oxide synthesis in activated macrophage cells. In this study, we further investigated the anti-inflammatory properties of BDMC33 on PGE 2 synthesis and cyclooxygenase (COX) expression in IFN- γ /LPS-stimulated macrophages. We found that BDMC33 significantly inhibited PGE 2 synthesis in a concentration-dependent manner albeit at a low inhibition level with an IC 50 value of 47.33 ± 1.00 μ M. Interestingly, the PGE2 inhibitory activity of BDMC33 is not attributed to inhibition of the COX enzyme activities, but rather BDMC33 selectively down-regulated the expression of COX-2. In addition, BDMC33 modulates the COX expression by sustaining the constitutively COX-1 expression in IFN- γ /LPS-treated macrophage cells. Collectively, the experimental data suggest an immunodulatory action of BDMC33 on PGE 2 synthesis and COX expression, making it a possible treatment for inflammatory disorders with minimal gastrointestinal related side effects.

Keyword: Anti-inflammatory; BDMC33; Cyclooxygenase; PGE 2; RAW264.7