P8

Eugenol suppresses inducible cyclooxygenase-2(COX-2) expressionin lipopolysaccharide-stimulated mouse macrophage cells.

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Based on the potential inhibitors of cyclooxygenase-2 (COX-2) as anti-inflammatory or cancer chemopreventive agents, we have evaluated the active principles of COX -2 inhibition from natural products. The methanol extract of the cortex of *Eugenia caryoplyllata* (Myrtaceae) showed the potent inhibition of prostaglandin E_2 (PGE_2) production in lipopolysaccharide (LPS)-activated RAW 264.7 cells (98.3% inhibition at the test concentration of 10 μg/ml). Further, hexane-soluble layer was the most active partition compared to ethyl acetate, n-butanol, and water -soluble parts. By bioassay-guided fractionation of hexane-soluble layer, eugenol was isolated and exhibited a significant suppression of PGE_2 production (IC_{50} = 0.06 μg/ml). In addition, eugenol suppressed the COX-2 gene expression in LPS-stimulated mouse macrophage cells. Therfore, eugenol might be a plausible lead candidate for further developing the COX-2 inhibitor as an anti-inflammatory or cancer chemopreventive agent.