

Anti-inflammatory Activity of Cone from Red Pine (*Pinus densiflora*)

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ABSTRACT

Pinus densiflora, the Korean Red Pine, is the predominant tree species of the cool, temperate forests of northeast Asia, occurring in pure stands across Korea, Japan, and parts of northern China and Russia. *Pinus densiflora* leaves, pollen, and bark have been widely used for traditional medicine, or edible purposes. However, pine cones contain many bioactive phytochemicals, but they are rarely used as natural raw materials. This study was conducted to evaluate the anti-inflammatory effect of pine cone extracts and its possibility of natural sources were evaluated. Pine cones were extracted with 80% methanol, concentrated and then partitioned with ethyl acetate, and the organic layer was used as a sample. The Pine cone Ethyl acetate Fraction (PEF) showed no toxicity to RAW 264.7 cells at a concentration of less than 50 μ g/ml. PEF inhibited the production of nitric oxide (NO) in RAW 264.7 cells treated with lipopolysaccharide (LPS). Also, It suppressed the expression of cyclooxygenase-2 (COX-2), inducible nitric oxide synthase (iNOS) and transcription of nuclear factor-kappa B (NF- κ B). These results suggest that pine cones can be used as an effective natural material for anti-inflammatory agent.

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