

## Suppression of Cyclooxygenase-2 Expression of Skin Fibroblasts by Wogonin, a Plant Flavone from *Scutellaria Radix*

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Previously, wogonin (5,7-dihydroxy-8-methoxyflavone) was found to suppress proinflammatory enzyme expression including cyclooxygenase-2 (COX-2), contributing to *in vivo* anti-inflammatory activity against skin inflammation. However, the detailed effect on each skin cell type has not been understood. Therefore, present investigation was carried out to find the effect of wogonin on inflammation-associated gene expression from skin fibroblasts in culture using reverse transcriptase-polymerase chain reaction. As a result, it was found that wogonin (10 - 100  $\mu$ M) clearly down-regulated COX-2 expression from NIH/3T3 cells treated with 12-O-tetradecanoylphorbol 13-acetate, interleukin-1 $\beta$  or tumor necrosis factor- $\alpha$ . But, the expression levels of COX-1, interleukin-1 $\beta$  and fibronectin were not significantly affected. This finding was well correlated with significant reduction of prostaglandin E<sub>2</sub> (PGE<sub>2</sub>) production by wogonin. As a comparison, NS-398 (selective cyclooxygenase-2 inhibitor) did not suppress COX-2 expression and other gene levels, while PGE<sub>2</sub> production was potently reduced at 0.1 - 10  $\mu$ M. All these results suggest that COX-2 down-regulation of skin fibroblasts may be, at least in part, one of anti-inflammatory mechanisms of wogonin against skin inflammation.