Wogonin, a bioactive flavonoid in herbal tea, inhibits inflammatory cyclooxygenase-2 gene expression in human lung epithelial cancer cells.

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Source
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Abstract
Wogonin, a naturally occurring plant flavonoid, is isolated from Chinese herbal plants Scutellaria baicalensis Georgi and S. barbata D. Don. The extract of S. baicalensis Georgi has been added to an assortment of health drinks or food supplements. Wogonin has been reported to exhibit anticancer and anti-inflammatory properties. Cyclooxygenase-2 (COX-2) is a key enzyme in the production of prostaglandins in inflammatory conditions. In this study, the effect of wogonin on phorbol 12-myristate 13-acetate (PMA)-induced COX-2 expression was investigated. It showed that wogonin inhibited PMA-induced COX-2 protein and mRNA levels in human lung epithelial cancer cells, and the mechanism of this inhibition was at the transcriptional level by using COX-2 gene promoter assay. Among various signal inhibitors, the mitogen-activated protein kinase kinase 1/2 (MEK1/2) inhibitor U0126 also inhibited PMA-induced COX-2 expression and COX-2 promoter activation. The activity of AP-1-driven promoter, but not nuclear factor-kappa B (NF-kappaB), was inhibited by U0126. The data indicated that MEK1/2-AP-1 is very important for PMA-induced COX-2 expression. Wogonin also inhibited PMA-induced AP-1 activation and the expression of c-Jun, a key component of AP-1. Taken together, it is suggested that wogonin inhibits PMA-induced COX-2 gene expression by inhibiting c-Jun expression and AP-1 activation in A549 cells.

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