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Therapeutic potentials of baicalin and its aglycone, baicalein against inflammatory disorders.

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Abstract

The flavonoids, baicalin (5,6-dihydroxy-2-phenyl-4H-1-benzopyran-4-one-7-O-d-β-glucuronic acid) 1 and its aglycone, baicalein 2 are found in edible medicinal plants, Scutellaria baicalensis Georgi and Oroxylum indicum (L.) Kurz in abundant quantities. The antioxidant and anti-inflammatory effects of these flavonoids have been demonstrated in various disease models, including diabetes, cardiovascular diseases, inflammatory bowel diseases, gout and rheumatoid arthritis, asthma, neurodegenerative-, liver- and kidney diseases, encephalomyelitis, and carcinogenesis. These flavonoids have almost no toxicity to human normal epithelial, peripheral and myeloid cells. Their antioxidant and anti-inflammatory activities are largely due to their abilities to scavenge the reactive oxygen species (ROS) and improvement of antioxidant status by attenuating the activity of NF-κB and suppressing the expression of several inflammatory cytokines and chemokines including monocyte chemotactic protein-1 (MCP-1), nitric oxide synthase, cyclooxygenases, lipoxygenases, cellular adhesion molecules, tumor necrosis factor and interleukins. In this review, we summarize the antioxidant and anti-inflammatory effects of baicalin and baicalein with molecular mechanisms for their chemopreventive and chemotherapeutic applications in the treatment of inflammatory-related diseases.

KEYWORDS: Baicalein; Baicalin; Chemoprevention; Flavonoids; Inflammatory diseases

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