Berberine Chloride

National Cancer Institute

Source

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The orally bioavailable, hydrochloride salt form of berberine, a quaternary ammonium salt of an isoquinoline alkaloid and active component of various Chinese herbs, with potential antineoplastic, radiosensitizing, anti-inflammatory, anti-lipidemic and antidiabetic activities. Although the mechanisms of action through which berberine exerts its effects are not yet fully elucidated, upon administration this agent appears to suppress the activation of various proteins and/or modulate the expression of a variety of genes involved in tumorigenesis and inflammation, including, but not limited to transcription factor nuclear factor-kappa B (NF-kB), myeloid cell leukemia 1 (Mcl-1), B-cell lymphoma 2 (Bcl-2), B-cell lymphoma-extra large (Bcl-xl), cyclooxygenase (COX)-2, tumor necrosis factor (TNF), interleukin (IL)-6, IL-12, inducible nitric oxide synthase (iNOS), intercellular adhesion molecule-1 (ICAM-1), E-selectin, monocyte chemoattractant protein-1 (MCP-1), C-X-C motif chemokine 2 (CXCL2), cyclin D1, activator protein (AP-1), hypoxia-inducible factor 1 (HIF-1), signal transducer and activator of transcription 3 (STAT3), peroxisome proliferator-activated receptor (PPAR), arylamine N-acetyltransferase (NAT), and DNA topoisomerase I and II. The modulation of gene expression may induce cell cycle arrest and apoptosis, and inhibit cancer cell proliferation. In addition, berberine modulates lipid and glucose metabolism.