

Curcumin: A Drug of Choice for the Treatment of Various Cancers

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ABSTRACT

Plants have been used for hundreds of years for the treatment and prevention of various diseases. The gradual change in cell signaling mediated by regulatory proteins is the main reason for the formation of cancer. Curcumin is a diferuloylmethane phytochemical, isolated from the dried rhizomes of turmeric, has shown potential against wide range of cancers including gastrointestinal, genitourinary, gynecological, hematological, pulmonary, thymic, brain, breast, and bone cancers. The underlying molecular mechanism of curcumin actions against various cancers remains under investigation. The multifaceted role of this compound includes the modulation of several deregulated cell signaling pathways. Curcumin may limit the risk of cancer by regulating the transcription factors transcription factors (NF- κ B, STAT3, b-catenin, and AP-1), growth factors (EGF, PDGF, and VEGF), enzymes (COX-2, iNOS, and MMPs), kinases (cyclin D1, CDKs, Akt, PKC, and AMPK), inflammatory cytokines (TNF, MCP, IL1, and IL6), upregulation of proapoptotic (Bax, Bad, and Bak) and downregulation of antiapoptotic proteins (Bcl2 and BclxL). Many animal and human studies have supported the safety of curcumin and even well tolerated in very high doses. Current study explores the chemopreventive effects of curcumin through its multiple molecular pathways and highlights its therapeutic value in the treatment and prevention of a wide range of cancers.

