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CHEMOPREVENTIVE EFFECTS OF XANTHORRHIZOL

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Xanthorrhizol is a sesquiterpenoid isolated from *Curcuma xanthorrhiza* Roxb.(Zingiberaceae) that has been traditionally used in Indonesia for dietary and medicinal purposes. In our studies to evaluate the cancer chemopreventive potential, xanthorrhizol inhibited the mutagenesis induced by reactive oxygen species in *Salmonella typhimurium* TA102 in a dose-related manner and decreased significantly the incidence and the multiplicity of skin tumors initiated by 7,12-dimethylbenz[*a*]anthracene and promoted by 12-*O*-tetradecanoylphorbol-13-acetate at 19 weeks. Xanthorrhizol significantly suppressed the TPA-induced cyclooxygenase-2 expression in a dose-dependent manner and activation of NF-kB that regulates the expression of various genes involved in inflammation and carcinogenesis. This effect was mediated through the inhibition of subsequent degradation of IkBα, an inhibitor of NF-kB. In another experiment, *C. xanthorrhiza* and its pharmacological active compound, xanthorrhizol suppressed viability in cultured human promyelocytic leukemia (HL-60) cell. The anti-proliferative activity of xanthorrhizol and *C. xanthorrhiza* appears to be attributable to their apoptosis-inducing capability as determined by characteristic morphological changes, nuclear condensation, quantification of sub diploid DNA content and caspase-3 activation. Taken together, these findings suggest that xanthorrhizol possesses potential chemopreventive activities.