In vitro chemopreventive effects of plant polysaccharides (Aloe barbadensis miller, Lentinus edodes, Ganoderma lucidum and Coriolus versicolor).

Kim HS, Kacew S, Lee BM. 

Source

Division of Toxicology, College of Pharmacy, Sungkyunkwan University, Changan-ku, Chunchun-dong, Kyunggi-do, Suwon 440-746, Korea.

Abstract

A plant polysaccharide, Aloe gel extract, was reported to have an inhibitory effect on benzo[a]pyrene (B[a]P)-DNA adduct formation in vitro and in vivo. Hence, chemopreventive effects of plant polysaccharides [Aloe barbadensis Miller (APS), Lentinus edodes (LPS), Ganoderma lucidum (GPS) and Coriolus versicolor (CPS)] were compared using in vitro short-term screening methods associated with both initiation and promotion processes in carcinogenesis. In B[a]P-DNA adduct formation, APS (180 micrograms/ml) was the most effective in inhibition of B[a]P binding to DNA in mouse liver cells. Oxidative DNA damage (by 8-hydroxydeoxyguanosine) was significantly decreased by APS (180 micrograms/ml) and CPS (180 micrograms/ml). In induction of glutathione S-transferase activity, GPS was found to be the most effective among plant polysaccharides. In screening anti-tumor promoting effects, APS (180 micrograms/ml) significantly inhibited phorbol myristic acetate (PMA)-induced ornithine decarboxylase activity in Balb/3T3 cells. In addition, APS significantly inhibited PMA-induced tyrosine kinase activity in human leukemic cells. APS and CPS significantly inhibited superoxide anion formation. These results suggest that some plant polysaccharides produced both anti-genotoxic and anti-tumor promoting activities in in vitro models and, therefore, might be considered as potential agents for cancer chemoprevention.

PMID:10426820