Chitosan prevents the development of AOM-induced aberrant crypt foci in mice and suppressed the proliferation of AGS cells by inhibiting DNAsynthesis.

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摘要

Abstract

We study the effect of fungal-derived chitosan on the development of chemical-induced colonic precancerous lesions in ICR mice and delineate its possible molecular mechanisms. In the 2 weeks preventive experiments, mice fed with a diet containing high molecular weight chitosan (HMWC) had significant fewer aberrant crypt foci formation than those fed with control diet. As the treatment extended to 6 weeks, both low molecular weight chitosan (LMWC)- and HMWC-fed mice contained less aberrant crypt foci when compared to control. However, such effect was not observed in mice in the 6 weeks therapeutic experiments. The anti-tumorigenesis effect of water-soluble chitosan oligomer (WSCO) was tested on four cancer cell lines. WSCO significantly suppressed AGS and to a less extent, COLO 205 cells proliferation. Flow cytometry analysis of cell cycle distribution indicated that the percentage of S phase reduced significantly in AGS cells treated with WSCO together with a decrease in DNA synthesis rate in BrdU incorporation assay. WSCO treatment a I so upregulated cell cycle-related genes p21/Cip and p27/Kip, whereas downregulated that of PCNA.

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