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Inhibition of azoxymethane-induced neoplasia of the large bowel by 3-hydroxy-3,7,11-trimethyl-1,6,10-dodecatriene (nerolidol)

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Abstract

The inhibitory capacities of four terpenes on azoxymethane (AOM)-induced neoplasia of the large bowel and duodenum was studied in male F344 rats. A complete course of AOM administrations was given and 3 days later the rats were fed a semipurified diet containing 5 mg/g of the test compounds, i.e. 3-hydroxy-3,7,11-trimethyl-1,6,10-dodecatriene (nerolidol), beta-citronellol, (+/-)-linalool and (1R,2S,5R)-(-)-menthol or a corresponding control diet. The experiment was terminated 22 weeks after the last dose of AOM. Under these conditions, nerolidol showed an inhibitory effect on carcinogenesis of the large bowel. The number of rats bearing large bowel neoplasms (adenomas) was reduced from 82% in the controls to 33% in rats fed nerolidol and the number of tumors/rat from 1.5 in the controls to 0.7 in the nerolidol group. A reduction in adenocarcinomas of the duodenum was found but the data are not statistically significant. The effects of nerolidol are of interest in terms of the identification of a new inhibitor of carcinogenesis of the large bowel. The chemical structure of nerolidol suggests the possibility that the compound might have an impact on protein prenylation or some other aspect of the mevalonate pathway, but this remains to be established.