Research Article

Cancer Prevention Research

Phase II Study of the Effects of Ginger Root Extract on Eicosanoids in Colon Mucosa in People at Normal Risk for Colorectal Cancer

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Abstract

Inhibitors of COX indicate that upregulation of inflammatory eicosanoids produced by COX, and in particular prostaglandin E_2 (PGE_2), are early events in the development of colorectal cancer (CRC). Ginger has shown downregulation of COX *in vitro* and decreased incidence/multiplicity of adenomas in rats. This study was conducted to determine if 2.0 g/d of ginger could decrease the levels of PGE_2, 13-hydroxyoctadecadienoic acids, and 5-, 12-, and 15-hydroxyeicosatetraenoic acid (5-, 12-, and 15-HETE), in the colon mucosa of healthy volunteers. To investigate this aim, we randomized 30 subjects to 2.0 g/d ginger or placebo for 28 days. Flexible sigmoidoscopy at baseline and day 28 was used to obtain colon biopsies. A liquid chromatography mass spectrometry method was used to determine eicosanoid levels in the biopsies, and levels were expressed per protein or per free arachidonic acid. There were no significant differences in mean percent change between baseline and day 28 for any of the eicosanoids, when normalized to protein. There was a significant decrease in mean percent change in PGE_2 ($P = 0.05$) and 5-HETE ($P = 0.04$), and a trend toward significant decreases in 12-HETE ($P = 0.09$) and 15-HETE ($P = 0.06$) normalized to free arachidonic acid. There was no difference between the groups in terms of total adverse events $P = 0.55$). On the basis of these results, it seems that ginger has the potential to decrease eicosanoid levels, perhaps by inhibiting their synthesis from arachidonic acid. Ginger also seemed to be tolerable and safe. Further investigation in people at high risk for CRC seems warranted. *Cancer Prev Res; 4(11); 1–9.*