Chemopreventive effect of raw and cooked lentils (Lens culinaris L) and soybeans (Glycine max) against azoxymethane-induced aberrant crypt foci.

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Abstract
Although lentils (Lens culinaris L) contain several bioactive compounds that have been linked to the prevention of cancer, the in vivo chemopreventive ability of lentils against chemically induced colorectal cancer has not been examined. Our present study examined the hypothesis that lentils could suppress the early carcinogenesis in vivo by virtue of their bioactive micro- and macroconstituents and that culinary thermal treatment could affect their chemopreventive potential. To accomplish this goal, we used raw whole lentils (RWL), raw split lentils (RSL), cooked whole lentils (CWL), and cooked split lentils (CSL). Raw soybeans (RSB; Glycine max) were used for the purpose of comparison with a well-studied chemopreventive agent. Sixty weanling Fischer 344 male rats, 4 to 5 weeks of age, were randomly assigned to 6 groups (10 rats/group): the control group (C) received AIN-93G diet, and treatment leguminous groups of RWL, CWL, RSL, CSL, and RSB received the treatment diets containing AIN-93G+5% of the above-mentioned legumes. After acclimatization for 1 week (at 5th to 6th week of age), all animals were put on the control and treatment diets separately for 5 weeks (from 6th to 11th week of age). At the end of the 5th week of feeding (end of 11th week of age), all rats received 2 subcutaneous injections of azoxymethane carcinogen at 15 mg/kg rat body weight per dose once a week for 2 consecutive weeks. After 17 weeks of the last azoxymethane injection (from 12th to 29th week of age), all rats were euthanized. Chemopreventive ability was assessed using colonic aberrant crypt foci and activity of hepatic glutathione-S-transferases.

Significant reductions (P < .05) were found in total aberrant crypt foci number (mean +/- SEM) for RSB (27.33 +/- 4.32), CWL (33.44 +/- 4.56), and RSL (37.00 +/- 6.02) in comparison with the C group (58.33 +/- 8.46). Hepatic glutathione-S-transferases activities increased significantly (P < .05) in rats fed all treatment diets (from 51.38 +/- 3.66 to 67.94 +/- 2.01 micromol mg(-1) min(-1)) when compared with control (C) diet (26.13 +/- 1.01 micromol mg(-1) min(-1)). Our findings indicate that consumption of lentils might be protective against colon carcinogenesis and that hydrothermal treatment resulted in an improvement in the chemopreventive potential for the whole lentils.

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