

ABSTRACT

Colon cancer is one of the most common cancers in Western countries and is the third most common cancer form in Sweden. Epidemiological studies have shown that low risk groups for colon cancer have a dietary pattern characterized by a low intake of fat and protein and a high intake of fiber. Vegetarians of various types constitute some of the low risk groups.

The objective of this study was to investigate whether a change from a mixed to a lactovegetarian diet would lead to a decrease in fecal variables which have been associated with a high risk for colon cancer.

The dietary shift resulted in a decrease in fat and protein intake and an increase in total carbohydrate, fiber, vitamin C and calcium intake. There was also a change in cooking methods, i.e. an increase in eating raw vegetables and a decrease in frying of foods.

The changes which were observed in the composition of the feces included: a decrease in the concentration of the secondary bile acid, deoxycholic acid and total long chain fatty acids; a decrease in the activity per gram fecal wet weight of the bacterial enzymes β -glucuronidase, β -glucosidase and sulphatase; an increase in feces weight which was mainly due to a higher water content; an increase in the daily excretion of short chain fatty acids. When the enzyme activities were expressed as total activity per day there were no differences in the β -glucuronidase and β -glucosidase activities but the sulphatase activity was still reduced. There was no change in breakdown of mucin, conversion of cholesterol to coprostanol, inactivation of tryptic activity or concentration of short chain fatty acids. These results indicate that the main mechanism for the decrease in "risk variables" is mediated through a dilution of fecal bile and fatty acids and fecal enzymes. This dilution may be biologically significant since it would result in a decreased interaction between the colonic epithelium and the bile and fatty acids and fecal enzymes per unit volume. Even though dilution seems to be the major effect of the dietary shift, i.e. the result of the water holding capacity of fiber, the remaining difference in sulphatase activity between the two diet periods indicates that there might be changes in the fecal composition in addition to the increase in water content. One possibility is that the change in diet influences the composition and/or the metabolic activity of the microflora.

To conclude, these results indicate a possible causal relationship between the dietary changes and the changes in the above risk variables for colon cancer.