

## Dietary Treatment of Colonic Cancer

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There are well over 40 online health databases worldwide. Each of these has a different focus ranging from a disease entity or a type of treatment to a specific health profession. Chiropractors are most familiar with Medline, the world's largest biomedical index. Chiroline, because of its chiropractic-oriented content, is also well known. However, there are times when these indexes are inadequate for specialized information searches.

In this column we will list briefly some of the other database resources and conduct an online search for information related to the dietary treatment of colonic neoplasms. First, let's take a brief look at 10 specialized biomedical indexes.

Ageline -- abstracts and bibliographic references related to middle age and aging in the fields of sociology, psychology, gerontology, health, health care services, and economics

AIDSline -- health policy issues related to and clinical aspects of Acquired Immunodeficiency Syndrome

Alcohol and Alcohol Problems Science Database -- abstracts of alcohol-related scientific references including all aspects of alcoholism (psychology, physiology, epidemiology, treatment, etc.)

BioethicsLine -- literature from medicine, biology, nursing, philosophy, religion, law and behavioral sciences dealing with bioethics

Cancerlit -- a database of citations and abstracts related to etiology, physiopathology, immunology, biochemistry, and therapy of cancer

CINAHL -- bibliographic references from literature within the field of nursing and allied health

F-D-C Reports -- product regulation and development and new product announcements by the U.S. Food and Drug Administration

National Epilepsy Library Database -- A publication of the Epilepsy Foundation of America containing literature dealing with the psychological and clinical aspects of epilepsy.

Psyclit -- bibliographic references from literature dealing with psychology and other related fields

Sedbase -- A full text database taken from Side Effects of Drugs Annual (SEDA), Meyler's Side Effects of Drugs (Meyler's) and Meyler's Pharmacological & Chemical Synonyms.

Medline, Chiroline and many other databases contain articles related to dietary treatment of colon cancer but if we are interested in a more thorough source of information, Cancerlit would be the logical choice. Searching Cancerlit can be made in several ways. You can access it directly through the Medlars system or through a third party vendor like Dialogue or Ovid. Search services like those provided by FCER and Chiroline can also make the information retrieval for you. The appropriate Medical Subject Headings (MeSH) to use would be the term "colonic neoplasms" and

the subheading "diet therapy," because synonyms like "colon cancer" and "dietary treatment" are not MeSH and therefore not used to index the research. With these terms we used our office computer with Grateful Med Software and made direct access to Cancerlit. The search from 1992-1995 revealed 26 articles meeting our requirements. Most of the research that has been recently indexed deals with the effects of dietary fiber, soy products, inositol, beta-carotene, fish oil or restrictions of dietary fat. Abstracts of four of those studies are as follows:

1. Shamsuddin AM. Inositol phosphates as anticarcinogens. First International Symposium on the Role of Soy in Preventing and Treating Chronic Disease, Feb. 1994; p. 12.

Abstract: Inositol hexaphosphate (InsP6, phytic acid) is abundant in cereals and legumes; in much smaller amounts InsP6 and its lower phosphorylated forms (InsP1-5) are contained in most mammalian cells, where they are important in regulating vital cellular functions. It was hypothesized that InsP6 may be inhibitory for different cancers and that addition of Ins may further enhance the anticancer effect of InsP6 in vivo. Studies in my laboratory have demonstrated striking anticancer action of InsP6 +/- and are presented in a table. InsP6 is quickly absorbed from the rat stomach and upper intestine and distributed as inositol and InsP1. In vitro, it is instantaneously taken up by malignant cells undergoing variable dephosphorylation to inositol and InsP1-5. While further studies are needed to elucidate the mechanism(s) of this novel action, inclusion of InsP6 in our strategies for cancer prevention and therapy is not only overdue, but also promising.

2. Reddy BS. Chemoprevention of colon cancer by dietary fatty acids. *Cancer Metastasis Rev* 1994; 13(3-4):285-302.

Abstract: During the last two decades, substantial progress has been made in the understanding of the relationship between the dietary constituents and development of colon cancer in man. Unlike studies of cancer among smokers and nonsmokers, nutritional epidemiologic studies are confronted with the inherent difficulty of assessing reasonably precise exposures. The lack of consistency between international correlation studies and case-control studies does not necessarily negate a dietary etiology of colon cancer because these inconsistencies may have arisen, at least in part, from methodological limitations. Some of these deficiencies in epidemiological studies of diet and cancer have been corrected; recent case-control studies demonstrated that high dietary fat is a risk factor for colon cancer development and that an overall increase in intake of foods high in fiber might decrease the risk for colon cancer. The results of epidemiologic studies may be assumed to present conservative estimate of the true risk for cancer associated with diet. The populations with high incidence of colon cancer are characterized by high consumption of dietary fat, which may be a risk factor in the absence of factors that are protective, such as whole-grain cereals and of other high-fiber. Laboratory animal model studies have shown that certain dietary lipids and fibers influence tumorigenesis in the colon. The data of metabolic epidemiological and laboratory animal model studies are sufficiently convincing with respect to enhancement of colon cancer by type of fat and protection by certain dietary fibers.

3. Van Munster IP, Nagengast FM. The role of carbohydrate fermentation in colon cancer prevention. *Scand J Gastroenterol Suppl* 1993; 200:80-6.

Abstract: Diet is an important factor in the development of colonic cancer. Fiber has been shown to decrease this risk. Part of this protective effect is probably mediated by colonic fermentation. About 10% of starch in the normal diet escapes digestion and absorption in the small bowel, and is therefore called resistant starch. This is a considerably larger source of fermentable substrate than fiber in the diet and could thus contribute significantly to the prevention of this malignancy. Short chain fatty acids, produced during fermentation, reduce colonic pH, affecting the intraluminal concentration of the putative co-carcinogenic secondary bile acids by precipitation, and by

inhibition of their enzymatic formation from primary bile acids. The role of secondary bile acids in promoting colonic carcinogenesis is probably mediated by their cytotoxic effect on colonic mucosa, leading to a compensatory increase in proliferation. A hyper-proliferative mucosa, having an enhanced sensitivity to mutagenic substances, is associated with an increased risk of colorectal cancer. Butyrate, one of the short chain fatty acids, could be significant, as it has anti-neoplastic properties in vitro in and in vivo. We conclude that fermentation is probably the key factor in the protective effect of fiber on colon carcinogenesis. Furthermore, consumption of resistant starch seems to be another way of stimulating fermentation.

4. Nagengast FM, Van Den Ban G, Ploemen JP, Leenen R, Zock PL, Katan MB, Hectors MP, de Haan AF, Van Tongeren JH. The effect of a natural high-fiber diet on faecal and biliary bile acids, faecal pH and whole-gut transit time in man. A controlled study. *Eur J Clin Nutr* 1993; 47(9):631-9.

Abstract: Dietary fiber possibly protects against colonic cancer by effects on bile acid metabolism. We investigated the effect of a natural high-fiber diet on secondary bile acid formation. Twelve healthy subjects on an habitual low-fiber diet (for four weeks) consumed a high-fiber menu for 10 weeks (experimental group). A Control group of 10 subjects consumed their regular high-fiber diet during this period. Faecal and biliary acid composition, faecal weight, faecal pH and gut transit time were studied before and after 6 and 10 weeks of fiber addition. Changes in the experimental group were compared to changes in the control group. The concentration, but not the excretion, of the secondary faecal bile acids was reduced in the experimental group. Faecal weight increased, faecal pH dropped and gut transit time was not altered. The biliary deoxycholic acid content decreased and the cholic acid content increased after six weeks, but returned to baseline values after 10 weeks of fiber addition. This study shows that a natural high-fiber diet lowers secondary faecal bile acid concentration through an increase in stool weight. The 7 alpha-dehydroxylation of primary bile acids is probably not or only transiently inhibited.

For additional information or questions about locating the literature, call 1-800-28-FACTS.

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