Leading article

Dietary fibre

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Fibre has been accepted widely as an essential part of our diet. Most health promotion boards and doctors advocate its use, especially for constipation and in the prevention of colorectal cancer. It is hardly surprising that both a high-fibre diet and the prescription of fibre are common in the primary and secondary care management of constipation. Some doctors even believe that fibre lowers serum cholesterol and reduces excess serum fats. Both bran and oats have been widely promoted since the 1970s, but a critical review by the Human Nutrition Group concluded that dietary oats lower blood cholesterol only modestly, at best[1].

Fibre in the context of healthcare originally referred to the insoluble structural matrix fibres (cellulose, hemicelluloses and lignins) or roughage, but the term now includes those natural gel-forming fibres (pectins, gums and mucilages) that are soluble and it may be expanded to include any non-starch polysaccharide or even protein not degraded by bacteria in the hind-gut. Although it is said to increase stool bulk and reduce bowel transit time by stimulating peristalsis, the excessively long colons and the higher incidence of megacolon and volvulus commonly associated with high-fibre intake seem to contradict this notion[2]. Indeed, the colons of severely constipated patients encountered by the authors are usually packed with partially or non-digested vegetable fibre. An understanding of the physical properties of fibre suggests that it does not make sense to add to the bulk of hard large stools in chronically constipated colons by increasing fibre intake. Even so, current recommendations continue to advocate this. In the authors' experience, most patients with idiopathic constipation are helped by decreasing, not increasing, their intake of dietary fibre.

A recent meta-analysis of 51 double-blind clinical trials examining the treatment of irritable bowel syndrome has confirmed that evidence is weak for the recommendation of bulking agents in the treatment of constipation in such patients[3]. Furthermore, a systematic review of 17 randomized controlled trials involving the treatment of irritable bowel syndrome with fibre showed that its benefits are only marginal in terms of symptom improvement and constipation; insoluble fibre may even increase abdominal pain and constipation[4].

In two well known randomized intervention trials increased fibre intake had no effect on the recurrence of colorectal adenoma[5,6]. These reports have raised considerable doubt about the wisdom of dietary advice promoting fibre consumption to prevent cancer. Although earlier epidemiological studies appeared to showed benefit, results from prospective studies have proved disappointing. The Nurses' Health Study is the largest propective analysis to date. It employed semiquantitative questionnaires and standardized food tables, and detected no protective effect of dietary fibre against the development of colorectal cancer or adenomas in women after a follow-up of 16 years. In fact, greater consumption of vegetable fibre was associated with a 35 per cent increased risk of colonic cancer[7]. The Health Professionals Study involved over 47 000 men and also showed no protective effect from fibre[8]. A comprehensive review of all case–control, longitudinal and randomized controlled studies revealed that only 13 of 24 case–control studies and only three of 13 longitudinal studies demonstrated a protective effect of dietary fibre against colorectal neoplasia; none of five randomized controlled trials showed any significant protection. Although 15 of 19 experimental studies in animal models have demonstrated a protective effect of fibre against tumour induction compared with controls, evidence from more relevant human prospective trials does not support the use of fibre as means of reducing the risk of colorectal neoplasia[9]. On the other hand, two recent papers have shown a protective role for fibre on distal colonic adenomas and on colorectal cancer respectively[10,11]. However, it should be realized that trials on vegetable and fibre intake are inherently subject to recall bias, as patients who subsequently develop colorectal tumours often blame themselves for not taking enough of these materials although they may well have done so.

On the basis of epidemiological, experimental and interventional data currently available, a strong case cannot be made for a protective effect of dietary fibre against constipation or colorectal cancer. Despite this uncertainty, current recommendations are still to promote an increase in fibre intake. The interactions of diet and the gut are complex and one must be wary of oversimplistic theories, even

more so when such theories develop into widely popular fads. Recent studies have demonstrated that it is now time to adopt an open mind on fibre. Dietary fibre may have its merits but its efficacy in constipation, and on cancer prevention in colorectal adenoma, is equivocal at best. A preconceived assumption must not dominate either future research or clinical practice.

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