

# BOOK REVIEW

REFINED CARBOHYDRATE FOODS AND DISEASE: SOME IMPLICATIONS OF DIETARY FIBRE, edited by D. P. Burkitt and H. C. Trowell. £ 7.80 (\$19.25), 356 pages. London, Academic Press, 1975.

This book presents a detailed review and summary of the work of Burkitt, Trowell, and others over the past 10 to 15 years on the possible relations of the dietary content of fiber and refined carbohydrate to many of the gastrointestinal, metabolic, and cardiovascular diseases which are common among Western societies and rare among many African, Asian, and Pacific populations.

There is a well-documented review of the changing nature of dietary make-up over the past 100 to 200 years in Western societies, with marked increases in refined carbohydrate content and decreases in dietary fiber content, as well as current world-wide data on these characteristics. For each disease in which the possibility of association with these dietary factors has been raised, there is detailed analysis of world-wide epidemiologic information on disease frequency and changes with time and presentation of theories and experimental and clinical evidence in support of too little fiber and/or too much refined carbohydrate as contributory causes.

When gathered together in this thorough fashion, these authors' case is impressive for many diseases, particularly those of the gastrointestinal tract: appendicitis, diverticular disease of the colon, tumors of the large bowel, and possibly hiatus hernia, ulcerative colitis and Crohn's disease, gallstones, hemorrhoids, and varicose veins.

The chapter on diabetes mellitus and obesity summarizes well the various data indicating the rarity of both of these disorders in earlier times and in societies with a high fiber and low refined carbohydrate diet, the parallel increases in frequency of both diseases with the reversal of the proportions of these dietary factors in Western society, and the temporary decline in both diseases that have occurred in such countries as The Netherlands and England during World War II, when there was a temporary change in diet to more fiber-containing (and less refined carbohydrate-containing) intake. Experimental evidence in animals is also reviewed on the appearance of diabetes in susceptible strains when diets are shifted from a more "natural," high-vegetable-and-fiber diet to a more synthetic, starchy, and low-fiber diet. The author (Trowell) points out that no one has yet attempted to dissect the possibly separate influences of fiber content and refined carbohy-

drate content on the development of diabetes in experimental animals or humans.

Other topics dealt with include the correlations between fiber-depleted, high refined carbohydrate diets and ischemic heart disease, and evidence about possible dietary relationships to thrombosis and fibrinolysis, to duodenal ulcer, and to a lesser extent to other diseases that show epidemiologic variations world-wide.

The clear intent of this book is to make as strong a case as possible for the authors' theories; at the same time the authors are careful in their use of evidence and indicate frequently the need for cautious interpretation and for more research. One possible confounding variable that I think they do not give sufficient attention to is the influence on their figures of increasing survival into older years in Western society.

An irrefutable observation of theirs is that calories from refined carbohydrates can be more quickly and easily ingested than equivalent calories from a high-fiber source, which without doubt contributes to our more obese society. The striking example given is the fact that a 12-ounce bottle of soda pop containing 38 gm. of sugar can be swallowed in one or two minutes; the ingestion of an equivalent amount of calories in an unrefined, higher-fiber form such as apples would require chewing four medium-sized apples.

Among the more intriguing observations is that, in experimental animals, natural combinations of fiber and unrefined carbohydrate (e.g. natural whole grain) are more effective in lowering cholesterol levels than an equivalent mixture of separated dietary fiber and plant carbohydrate. This suggests that the form of the fiber-carbohydrate mixture is as important as the absolute concentrations and that natural whole-grain-containing foods may be more advantageous, at least in some ways, than adding back products such as bran to refined grain products.

This is a highly readable book. Because of the breadth of topics covered, it should be of general interest to any health professional in addition to the sections which are of specific interest to people concerned with diabetes mellitus and related cardiovascular diseases. It is a very good reference source to this field. It points out important questions that cry for further careful studies. Personally, meanwhile, I am sufficiently impressed with the whole weight of the evidence presented to pay more attention to natural fibrous foods in my own intake and in the diets of patients.

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## Errata

In DIABETES 25, Supplement 2, Proceedings of a Conference on Diabetic Microangiopathy, the following corrections should be made in table 2, page 878, of "Renal Function Changes in Diabetes Mellitus," by Carl Eric Mogensen, M.D.: Under "Fall rate of GFR

(during treatment)" the last three numbers should be preceded by a minus sign; under "Difference" there should be no minus signs; the line under the bottom rule should read " $2 P < 0.01$ ." The year of publication of reference 25 should be 1976.