

CRC

HANDBOOK  
*of*  
DIETARY FIBER  
*in*  
HUMAN NUTRITION

Gene A. Spiller

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# CRC Handbook of Dietary Fiber in Human Nutrition

Editor  
Gene A. Spiller, D.Chem., Ph.D.  
Consultant  
in  
Nutrition Research  
Los Altos, California



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## PREFACE

The *CRC Handbook of Dietary Fiber in Human Nutrition* is proof of the amazing growth in the study of dietary fiber during the 1970s and 1980s. When I first edited a book on dietary fiber, *Fiber in Human Nutrition*, in the mid-1970s, I was happy to find at least a few good investigators who could contribute chapters to it. It would have been impossible to find a large number of scientists that could have made a major contribution to that early book.

However, as work was beginning on this Handbook in 1982 and I was presenting the design at the Symposium on Fiber in Human and Animal Nutrition in New Zealand that year, not only was I able to find all the 50-plus authors I needed, but I had the sad task of omitting some outstanding names.

Interest in what used to be the disregarded cinderella nutrient of the early 20th century has grown at a rate greater than almost any other nutrient. The plant cell wall and the gums and mucilages had found their well-deserved niche in nutrition and medicine.

Even though few people still believe that dietary fiber has not found the *ultimate* proof that makes it a required nutrient, the momentum is with the ones who have found valid uses for it in high fiber foods in treating diseases such as type II diabetes. The momentum is also with the epidemiologists who have found correlations with lower incidence of colo-rectal cancer, the ones that have found in high fiber foods one of the best ways to prevent excessive fat and food intake. It is a list that can go on and on.

Has the ultimate study on the long range effects of dietary fiber been published? Of course not. It is probably impossible to carry out the ultimate study on the correlation of nutrition to chronic diseases under present conditions: we must accept the pieces of evidence derived from good epidemiology, from controlled human studies and, of course, animal studies. The lifetimes of many of us would be needed to satisfy the purists who hope for the ultimate study, in this or any other field in which we deal with the lifetime of a human being.

There is more to complicate things: dietary fiber polymers are quite elusive, unlike vitamins that can be isolated or synthesized readily. Some of these polymers may change when torn apart from their complex structure in the cell wall. Thus, when we attempt to extract them, too often we isolate something quite different from the original material, perhaps useful, but most certainly different. This bothers many scientists who would like to use the pure form of nutrients for their investigations. There is more: dietary fiber is so interactive that other components of the diet probably vary its effect on humans. All this makes dietary fiber research so challenging and so difficult!

This book is proof that there are many dedicated scientists and clinicians that have given their best efforts to dietary fiber. There are many who could not be included here, as there is a point in an effort of this kind at which the editor must sadly stop asking for contributions and recognize that the book must be a finite number of pages. I owe a very special thanks to all the authors in this book, for after all it is their book.

The book presents a large volume of data. The reader is directed to the Table of Contents which illustrates the design of the book, a design that was conceived to make it as easy as possible to find the needed data. Chemistry, analytical methodologies, physiological and biochemical aspects, clinical and epidemiological studies, and consumption patterns are covered extensively. Tables with the dietary fiber content of various foods analyzed by different methods are given at the end of the book.

Gene A. Spiller  
Los Altos, California  
February 1985

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## THE EDITOR

Gene Alan Spiller, D.Chem., Ph.D., is a consultant in research nutrition in Los Altos, California, lecturer in nutrition at Foothill College in Los Altos, California, and editor of nutrition-related books.

Dr. Spiller received his doctor of chemistry degree from the University of Milan (Italy) in 1949, and a Master's degree (1968) and a Ph.D. both in nutrition from the University of California at Berkeley.

In the 1970s he was in charge of the nutrition physiology section of Syntex Research in Palo Alto California, where he did extensive human and animal research on dietary fiber. He continued his work on dietary fiber as an independent consultant in the 1980s, mainly responsible for designing and conducting human nutrition studies. This research has led to many scientific papers and reviews.

In the early 1970s, the early days of dietary fiber research in nutrition and medicine, he was responsible for one of the first multiauthor books on this topic when he edited *Fiber in Human Nutrition* (Plenum Press, 1975) which was followed by two other multiauthor books on the same topics, *Topics in Dietary Fiber Research* (1978) and *Medical Aspects of Dietary Fiber* (1980) both published by Plenum Press.

In addition, he has been a lecturer in nutrition in two colleges in the San Francisco Bay Area (Mills College and Foothill College).

He has a special interest in lesser known nutritional factors that may be beneficial to human health even though not essential to life, especially factors that are present in plant foods and that may work together with dietary fiber in the prevention of degenerative diseases. He continues human studies on dietary fiber, including the investigation of differences between high fiber diets and fiber concentrates, and he has recently added to human studies the effects of some plant factors often associated with high fiber foods.

Dr. Spiller has been responsible for organizing international workshops on dietary fiber, such as the recent one on fiber supplements at the XIII International Congress of Nutrition.

## ADVISORY BOARD

**Hugh James Freeman, M.D.**  
Associate Professor and Head  
Division of Gastroenterology  
Health Sciences Center Hospital  
University of British Columbia  
Vancouver, British Columbia, Canada

**Ivan Furda, Ph.D.**  
Head, Carbohydrate Research  
General Mills  
James Ford Bell Technical Center  
Minneapolis, Minnesota

**David J. A. Jenkins, M.D., Ph.D.**  
Professor  
Department of Nutritional Sciences  
Faculty of Medicine, and St. Michael's  
Hospital  
University of Toronto  
Toronto, Ontario, Canada

**David Kritchevsky, Ph.D.**  
Associate Director  
The Wistar Institute  
Philadelphia, Pennsylvania

**D. A. T. Southgate, Ph.D.**  
Head  
Nutrition and Food Quality Division  
AFRC Food Research Institute  
Norwich, England

## CONTRIBUTORS

James W. Anderson, M.D.  
Chief, Endocrine-Metabolic Section  
Veterans Administration Medical  
Center  
Professor of Medicine and Clinical  
Nutrition  
University of Kentucky  
Lexington, Kentucky

Nils-Georg Asp, M.D.  
Professor  
Department of Food Chemistry  
Chemical Center  
University of Lund  
Lund, Sweden

Katrine I. Baghurst, Ph.D.  
Senior Research Scientist  
Division of Human Nutrition  
CSIRO  
Adelaide, Australia

Gina Benn, R.N.  
Department of Nutritional Sciences  
Faculty of Medicine  
St. Michael's Hospital  
University of Toronto  
Toronto, Ontario, Canada

Sheila Bingham, Ph.D.  
Medical Research Council  
Dunn Clinical Nutrition Centre  
Cambridge, England

Denis P. Burkitt, M.D.  
Unit of Geographic Pathology  
St. Thomas Hospital Medical School  
London, England

Beverly M. Calkins, D.H.Sc.  
Post-Doctoral Fellow  
Epidemiology Department  
Johns Hopkins University  
Baltimore, Maryland

Marie M. Cassidy, Ph.D.  
Departments of Biochemistry and  
Physiology  
George Washington University School  
of Medicine and Health Sciences  
Washington, D.C.

John H. Cummings, M.D.  
Medical Research Council  
Dunn Clinical Nutrition Centre  
Cambridge, England

Sharon E. Fleming, Ph.D.  
Associate Professor  
Department of Nutritional Sciences  
University of California, Berkeley  
Berkeley, California

Hugh James Freeman, M.D.  
Associate Professor and Head  
Division of Gastroenterology  
Health Sciences Center Hospital  
University of British Columbia  
Vancouver, British Columbia, Canada

Wenche Frolich, D.Ph.  
Institute for Nutrition Research  
Oslo, Norway

Ivan Furda, Ph.D.  
Head, Carbohydrate Research  
General Mills  
James Ford Bell Technical Center  
Minneapolis, Minnesota

Daniel D. Gallaher, Ph.D.  
Assistant Professor  
Food and Nutrition Department  
North Dakota State University  
Fargo, North Dakota

Jean Pierre Gendreau, M.D.  
Professor  
Department of Gastroenterology  
Hospital Rothschild  
Paris, France

Sherwood H. Gorbach, M.D.  
Infectious Disease Section  
New England Medical Center Hospital  
Boston, Massachusetts

Barbara F. Harland, Ph.D., R.D.  
Associate Professor of Nutrition  
Department of Human Nutrition and  
Food  
School of Human Ecology  
Howard University  
Washington, D.C.



**Kenneth W. Heaton, M.D.**  
Reader in Medicine  
Department of Medicine  
Bristol Royal Infirmary  
Honorary Consultant Physician  
University of Bristol  
Bristol, England

**Peter J. Horvath, Ph.D.**  
Research Assistant Professor  
Department of Medicine  
Division of G.I. and Nutrition  
State University of New York, Buffalo  
Buffalo, New York

**Alexandra L. Jenkins**  
Research Associate  
Department of Nutritional Sciences  
Faculty of Medicine  
University of Toronto  
Toronto, Ontario, Canada

**David J. A. Jenkins, M.D., D.Ph.**  
Professor  
Department of Nutritional Sciences  
Faculty of Medicine, and St. Michael's  
Hospital  
University of Toronto  
Toronto, Ontario, Canada

**Joseph L. Jeraci, Ph.D.**  
Research Associate in Rumen  
Microbiology  
Department of Animal Science  
Cornell University  
Ithaca, New York

**Heinrich Kasper, M.D.**  
Professor of Medicine  
Medical Clinic  
University of Wurzburg  
Wurzburg, West Germany

**David Kritchevsky, Ph.D.**  
Associate Director  
The Wistar Institute  
Philadelphia, Pennsylvania

**Yves Le Quintrec, M.D.**  
Assistance Publique  
Hospital Rothschild  
Paris, France

**Ruth McPherson-Kay, M.D., Ph.D.**  
St. Michael's Hospital  
University of Toronto  
Toronto, Ontario, Canada

**Bunpei Mori, Ph.D.**  
The Institute of Nutrition  
Tokyo, Japan

**Juan M. Munoz, M.D.**  
Endocrinology Department  
Fargo Clinic  
Fargo, North Dakota

**David G. Oakenfull, Ph.D.**  
Principal Research Scientist  
Division of Food Research  
CSIRO  
North Ryde, New South Wales,  
Australia

**Donald Oberleas, Ph.D.**  
Department of Education, Nutrition,  
and Restaurant/Hotel Management  
College of Home Economics  
Texas Tech University  
Lubbock, Texas

**John D. Potter, M.B.B.S.**  
Division of Human Nutrition  
CSIRO  
Adelaide, Australia

**Leon Proskey, Ph.D.**  
Division of Nutrition  
Food and Drug Administration  
Washington, D.C.

**Cynthia G. Rainey-McDonald, M.Sc.**  
Bureau of Nutritional Sciences  
Health Protection Branch  
Health and Welfare Canada  
Ottawa, Ontario, Canada

**Sally J. Record, M.A.C.S.**  
Division of Human Nutrition  
CSIRO  
Adelaide, Australia

Bandaru S. Reddy, D.V.M., Ph.D.  
Nutrition and Endocrinology  
Naylor Dana Institute for Disease  
Prevention  
American Health Foundation  
Valhalla, New York

James B. Robertson, Ph.D.  
Research Specialist  
Division of Nutritional Sciences  
Cornell University  
Ithaca, New York

Barbara Olds Schneeman, Ph.D.  
Associate Professor  
Department of Nutrition  
University of California, Davis  
Davis, California

Zhi-Ping Shen, M.D.  
Professor  
Institute of Health  
Chinese Academy of Medical Science  
Beijing, People's Republic of China

D. A. T. Southgate, Ph.D.  
Head  
Nutrition and Food Quality Division  
AFRC Food Research Institute  
Norwich, England

Gene A. Spiller, D.Chem., Ph.D.  
Consultant in Nutrition Research  
Los Altos, California

Jon A. Story, Ph.D.  
Professor of Nutritional Physiology  
Department of Foods and Nutrition  
Purdue University  
West Lafayette, Indiana

C. Tasman-Jones, M.D.  
Professor  
Department of Medicine  
University of Auckland  
Auckland, New Zealand

Olof Theander, Ph.D.  
Professor of Organic Chemistry  
Department of Chemistry and  
Molecular Biology  
Swedish University of Agricultural  
Sciences  
Uppsala, Sweden

Hugh Trowell, M.D.  
Consultant  
Formerly Consultant Physician  
Makerere University and Mulago  
Hospital  
Kampala, Uganda

Keisuke Tsuji, M.D., Ph.D.  
Chief of Laboratory  
Laboratory of Exploitation of Nutrition  
National Institute of Nutrition  
Tokyo, Japan

George V. Vahouny, Ph.D.  
Professor of Biochemistry  
Department of Biochemistry  
George Washington University  
Washington, D.C.

Peter J. Van Soest, Ph.D.  
Professor  
Department of Animal Science  
Cornell University  
Ithaca, New York

Alexander R. P. Walker, D.Sc.  
Human Biochemistry Research Unit  
South African Institute for Medical  
Research  
Johannesburg, South Africa

Eric Westerlund, D.Ph.  
Research Assistant  
Department of Chemistry and  
Molecular Biology  
Swedish University of Agricultural  
Sciences  
Uppsala, Sweden

**Margaret White, B.S.**  
Nutrition and Food Quality Division  
Food Research Institute  
Norwich, England

**Thomas M. S. Wolever, B.M., Ph.D.**  
Research Associate  
Department of Nutritional Sciences  
Faculty of Medicine  
University of Toronto  
Research Fellow  
St. Michael's Hospital  
Toronto, Ontario, Canada

**M. N. Woods, Ph.D.**  
New England Medical Center  
Boston, Massachusetts

**Su-Fang Zheng, Ph.D.**  
Associate Professor  
Chemical Etiology and Carcinogenesis  
Department  
Cancer Institute  
Chinese Academy of Medical Science  
Beijing, People's Republic of China

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## ***Section 1: Dietary Fiber — Overview and Historical Perspectives***

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