

Dietary Reference Intakes: Proposed Definition of Dietary Fiber

I. OVERVIEW AND CHARGE TO THE PANEL

Currently, a variety of definitions of dietary fiber exist worldwide. Some definitions are based solely on one or more analytical methods for isolating dietary fiber, while others are physiologically based. For instance, in the United States dietary fiber is defined by a number of analytical methods that are accepted by the Association of Official Analytical Chemists International (AOAC) and these methods isolate nondigestible animal and plant carbohydrates. In Canada, however, a formal definition has been in place that recognizes nondigestible food of plant origin, but not of animal origin, as dietary fiber. As nutrition labeling becomes uniform throughout the world, it is recognized that a single definition of dietary fiber is needed. Furthermore, new products are being developed or isolated that behave like fiber, yet do not meet the traditional definitions of fiber, either analytically or physiologically. A lack of consensus among various international groups and organizations exists.

The current situation regarding labeling and defining dietary fiber in the United States and many other countries is arbitrary due to its reliance on analytical methods as opposed to an accurate definition that includes its role in health. Without an accurate definition, compounds can be designed or isolated and concentrated using the currently available methods, without necessarily providing beneficial health effects. Other compounds can be developed that are nondigestible and provide beneficial health effects, yet do not meet the current U.S. definition based on analytical methods. For the above reasons, the Food and Nutrition Board, under the oversight of the Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, assembled a Panel on the Defini-

tion of Dietary Fiber to develop a proposed definition(s) of dietary fiber. This Panel held three meetings and a workshop.

The first task of the Panel was to review all current definitions of dietary fiber. These definitions are described in Section II, "Definitions of Dietary Fiber" and summarized in Table 1. In the process of reviewing the current definitions, the Panel noted major areas of difference among the definitions as to whether the following were included: animal carbohydrates, carbohydrates not recovered by alcohol precipitation, mono- and disaccharides, lignin, resistant starch, and whether the fiber had to be intact and naturally occurring in food. Some definitions are based on analytical methods for dietary fiber and these methods are reviewed in Table 2. Finally, some definitions require that a fiber have specific physiological effects, whereas others do not. How each current definition has dealt with these issues is summarized in Table 3. The Panel's analyses of each of these differentiating issues are found in section III, "Issues in Defining Dietary Fiber". Discussion and resolution of each of these differences among existing definitions formed the basis of the Panel's recommendation, which is described under section IV, "Proposed Definition of Dietary Fiber", together with an accompanying explanation for each aspect of the definition. Finally, section V, "Impact of the Definitions of Dietary Fiber and Unresolved Issues", delineates the likely consequences of adopting the proposed definitions with respect to their impact on: (1) analytical methodology, (2) recommended levels of intake, (3) food composition databases, (4) dietary fiber research, (5) developments in the food industry, and (6) nutrition labeling.

Based on the Panel's deliberations, the following definitions are proposed:

Dietary Fiber consists of nondigestible carbohydrates and lignin that are intrinsic and intact in plants.

Added Fiber consists of isolated, nondigestible carbohydrates that have beneficial physiological effects in humans.

Total Fiber is the sum of *Dietary Fiber* and *Added Fiber*.

Following the release of these proposed definitions, it is expected that significant discussion will result in order to ascertain the extent to which they advance the move toward an acceptable framework for methodologically appropriate definitions based on the role of fiber in health. Comments regarding the acceptability of the proposed definitions and the framework for their incorporation into labeling and research initiatives are welcomed with the expectation that the definitions and framework will be revised based on consideration of such comments. The final definitions proposed by the Panel and the Standing Committee on the Scientific Evaluation of Dietary Reference Intakes will be included in the forthcoming Dietary Reference Intakes report on macronutrients, which will include an evaluation of the role of dietary fiber in health.