

# Is Dietary Fiber Considered an Essential Nutrient?



**I**N THE UNITED STATES, THERE ARE two distinctions relating to fiber (*dietary fiber* and *functional fiber*; with *total fiber* including both). According to the Institute of Medicine, *dietary fiber* consists of the naturally-occurring “edible, nondigestible carbohydrate and lignin components,” whereas *functional fiber* is considered to be an “isolated, extracted, or synthetic” form that provides specific health benefits.<sup>1-3</sup>

Examples of functional fibers include inulin, beta-glucans, polydextrose, psyllium, and resistant starch, and the potential bodily effects range from increased stool weight and frequency to improved blood chemistry (eg, lipid and glucose levels).<sup>1</sup> The addition of functional fiber to foods may help some people increase their overall fiber intake. However, this form of fiber may not yield the same benefits as food sources that contain dietary fiber naturally. As with other nutrition-related research, a synergistic effect is thought to be responsible for fiber’s notable health benefits.<sup>2,3</sup>

In the past, soluble and insoluble were terms used to describe the attributes of fiber, as the physiological benefit could be different depending on the source. Most dietary sources of naturally-occurring fiber contain both soluble and insoluble fiber, only in varying amounts. The Institute of Medicine no longer classifies fiber in this way, but the labeling of “soluble fiber” is still required when health claims appear on food packaging.<sup>4</sup> Considering fiber passes through the human gastrointestinal tract without being digested or absorbed in the small intestine,<sup>1</sup> there are numerous

health benefits, regardless of the type consumed.

The daily recommended amount of fiber was originally derived from observational data that reflected a lowered risk of coronary heart disease in populations that consumed an adequate amount.<sup>1-3</sup> Research relating to its role in reducing the risk of type 2 diabetes and colorectal cancer has been mounting. However, the findings specific to the source of fiber (eg, fruit, vegetable, legume, cereals) and risk reduction for different cancers have varied. More research is also needed relating to the type of fiber and its influence on satiety and body weight. In addition, there has been an increased focus relating to the fermentability of different sources of fiber, especially as it relates to the gut microbiota.<sup>2</sup>

Fiber is undoubtedly an essential part of a healthy eating plan, yet its implication as a nutrient has been somewhat elusive. The definition of what constitutes as fiber has evolved over the years, as have the methods used to assess it.<sup>2,3</sup> Dietary fiber has been described as a range of compounds as opposed to a single one.<sup>3</sup> These differences in the treatment of fiber may complicate the interpretation of research findings, as well as nutritional analyses, in some cases.<sup>2</sup>

Although fiber is derived from one of the macronutrients, the absence of a deficiency state prevents it from being considered an essential nutrient. Furthermore, there is no Estimated Average Requirement or Recommended Dietary Allowance for fiber as there are for other carbohydrate sources. An Adequate Intake has been established instead, and this amount is contingent on the amount of kilocalories consumed.<sup>1,2</sup>

The potential for fiber to interact with the absorption of certain nutrients has been recognized, but at this time the risk is thought to be insignificant, so no Tolerable Upper Level has been identified for either dietary fiber or functional fiber. Although gastrointestinal complaints have been reported with high

amounts, this has been limited to only functional fiber sources.<sup>1,2</sup>

The recommendation for fiber is not new and has not changed despite the advances that have been made regarding how it is quantified, yet many Americans are still falling short. The Executive Summary Scientific Report of the 2015 Dietary Guidelines Advisory Committee acknowledges fiber as a shortfall nutrient and considers it to be a “nutrient of public health concern [due to the] adverse health outcomes” relative to its underconsumption.<sup>5</sup>

Although the classification of fiber may need to be further clarified in the future, it is currently known that foods that are naturally good sources of fiber contribute to the nutrient adequacy of a person’s diet and are vital to good health. Promoting an overall healthy dietary pattern that includes a variety of fiber sources, especially fruits, vegetables, whole grains, legumes, nuts, and seeds, will help Americans achieve the daily recommended amount for dietary fiber and fulfill other important nutrient requirements while helping to lower their risk for some chronic diseases.

## References

1. Institute of Medicine. Dietary Reference Intakes (DRIs): The Essential Guide to Nutrient Requirements. Washington, DC: National Academies of Sciences; 2006:110-121.
2. Academy of Nutrition and Dietetics. Position of the Academy of Nutrition and Dietetics: Health implications of dietary fiber. *J Acad Nutr Diet.* 2015;115(11):1861-1870.
3. Raninen K, Lappi J, Mykkänen H, Poutanen K. Dietary fiber type reflects physiological functionality: Comparison of grain fiber, inulin, and polydextrose. *Nutr Rev.* 2011;69(1):9-21.
4. US Food and Drug Administration. Guidance for industry: A food labeling guide (11. Appendix C: Health Claims). <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Labeling/Nutrition/ucm064919.htm>. Published January 2013. Accessed November 4, 2015.
5. 2015 Dietary Guidelines Advisory Committee. Scientific report of the 2015 Dietary Guidelines Advisory Committee, part A: Executive summary. <http://health.gov/dietaryguidelines/2015-scientific-report/PDFs/02-executive-summary.pdf>. Accessed November 4, 2015.

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