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### Comments on the **Proposed NAS Definition of Dietary Fiber**

In response to your request for comments to the proposed NAS Definition of Dietary Fiber, the American Association of Cereal Chemists (AACC) is providing our thoughts. In this communication we want to accomplish several things:

- (a) to **promote further consideration of the AACC definition**, which was first released publicly at the IFT meeting in Dallas in June of 2000<sup>1</sup> after lengthy scientific investigation and careful deliberation.
- (b) to **discuss parts** of our definition that may have been **interpreted by the NAS panel differently** than intended by the AACC committee,
- (c) to recognize the **elements of the NAS definition** and report which **agree with the scientific consensus of the AACC definition**, and to **applaud those decisions**, and
- (d) to discuss those **parts of the definition** that are particularly **troubling** to the those at the AACC involved in rethinking the definition.

We appreciate this opportunity to comment on the efforts of the NAS panel, and to provide input from the perspective of the Dietary Fiber Definition Committee of the AACC. If you have any questions regarding our commentary, please feel free to give me a call.

Sincerely

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on behalf of the Dietary Fiber Definition Committee

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<sup>1</sup> Table 1 of the panel report incorrectly indicates the date of the AACC definition as 2001, not May 2000. See *Cereal Foods World*, July, 2000 p325.

## **The AACC Definition Process and the Resultant Definition**

The AACC scientific review committee on the definition of dietary fiber was initiated in November of 1998. It was constituted to give a balance between academe, industry and government. The Committee's first teleconference was held shortly thereafter and the interactive website "Defining Dietary Fiber" went live. The website provided the committee the opportunity to gather the expertise of fiber researchers and end users from around the world by electronic interaction. Work of the Committee was furthered by a workshop in June 1999 with invited experts from academe, industry and government. The workshop was co-sponsored by the Carbohydrate Technical Committee of the International Life Sciences Institute of North America. Subsequently, two public forums were held in 1999 - one at the Institute of Food Technologists annual meeting in Chicago and one at the AACC annual meeting in Seattle. The purpose of the public forums was to obtain feedback on the emerging definition from national and international food experts, to discuss the scientific basis of the definition and to refine the definition. Outcomes from these meetings appeared immediately on the website and in a timely fashion in print. During this process, all input to the committee from the website and from the forums was considered in formulating the final definition.

The final definition was submitted to the AACC Board of Directors after the annual meeting (11/1999) and adopted by the AACC Board of Directors (5/2000). It was publicly introduced at a press conference held at the IFT meeting in Dallas (6/2000) and press releases were sent out at that time. The updated definition included important aspects of the historical working definition but added to it. The new AACC definition included not only those substances traditionally considered as fiber, but also innate, derived, and synthesized substances that function physiologically as dietary fiber but were not included in earlier iterations. Further, the new AACC definition captured those physiological functions for which there was adequate scientific agreement. The new AACC definition reads:

**"Dietary fiber is the edible parts of plants or analogous carbohydrates that are resistant to digestion and absorption in the human small intestine with complete or partial fermentation in the large intestine. Dietary fiber includes polysaccharides, oligosaccharides, lignin, and associated plant substances. Dietary fibers promote beneficial physiological effects including laxation, and/or blood cholesterol attenuation, and/or blood glucose attenuation."**

It should be noted that the last sentence included those beneficial physiological functions for which there was significant scientific agreement at the time of the writing of the definition. The intention was to give examples and to enable enfranchisement of food components that offer these effects. The framers **never intended that the allowed physiological functions be limited to just those listed**, as some have interpreted, in perpetuity.

## Scientific Consensus

The **AACC Committee is pleased** that the NAS definition and report contains the following elements:

- 1.) the inclusion of **resistant oligosaccharides** and **resistant starch** in the proposed definition,
- 2.) the concurrence between the NAS committee report and the AACC definition listing the **same three physiological effects** for which there is significant scientific agreement,
- 3.) the recognition of the importance of writing the best possible definition for dietary fiber , which in turn will give impetus to a **search for methods to capture the components** of the definition.

## Concerns of the AACC Dietary Fiber Committee

The AACC Committee is concerned that the NAS definition and report contains the following elements, many of which are subject to a variety of interpretations and would be of concern if enacted as regulation:

- 1.) The words ‘intrinsic and intact’. It would be **difficult to know if the following are ‘intrinsic and intact** making them dietary fiber or added fiber:’
  - a.) bran that has been physically removed is not longer intact;
  - b.) beta-glucan which has separated from oatmeal during cooking is intrinsic but no longer intact;
  - c.) the crushed parts of kernel that are intrinsic but no longer intact ;
  - d.) guar which has been hydrolyzed (the way guar is customarily added to food) is technically neither intrinsic nor intact.
- 2.) The introduction of three terms - ‘**dietary fiber**’ and ‘**added fiber**’ with the sum of these two entities creating the third entity ‘**total fiber.**’ We believe that this distinction has many problems because these two subcategories of total fiber are **not distinguishable physiologically or methodologically.**  
For example, how will the following be labeled?
  - a.) Will additional bran added to a bread formulation be ‘dietary fiber’ or ‘added fiber’?
  - b.) Will the addition of guar gum and psyllium always be ‘added fiber’ unless whole isphagula or guar pods are added?
- 3.) The three new entities may **necessitate a change of the nutrition label.** This is no small matter. Label changes are very costly to industry in terms of changing label plates and reanalysis of the components. Further, three entities will increase space required by the **Nutrition Facts** panel.
- 4.) The three new entities will add to **consumer confusion** and will require substantial **nutrition education and reeducation** since the proposed definition redefines ‘dietary fiber. As nutrition educators and label interpreters, we will be required to explain that the entity ‘total fiber’ was formerly ‘dietary fiber.’ ‘Dietary fiber’ is now only that which is ‘intrinsic and intact.’ The terms ‘intrinsic and intact’ will need explanation in consumer terms. A consumer will have a difficult time understanding how a guar gum wafer’s fiber is ‘added’ rather than ‘intrinsic and intact.’  
There is already great confusion about what is soluble fiber and insoluble fiber. Since these are still part of approved health claims, these terms will also be on the label. Consumers will

be uncertain how these health claim fiber terms fit into the three proposed entities.

- 5.) The **recommendation of method(s) that have not had successful collaborative studies** leading to adoption as Official or Approved Methods of Analyst [eg the Englyst method(s)] is very concerning. The Englyst method(s) do not agree with other internationally accepted methods for measuring dietary fiber nor do they agree with each other for many food samples. Further, the use of reagents such as DMSO specified in these methods to remove resistant starch, causes the destruction of food components generally recognized as dietary fiber. While it is generally recognized in the scientific community that analytical methodology needs to be updated to measure food components such as inulin that have some physiological effects of dietary fiber, the NAS definition report **recommends entirely new analytical approaches and procedures**. This fact is problematic since most studies in the US literature and food composition and food label data use AOAC Official enzymatic/ gravimetric fiber methods. Without reanalysis of the entire US food supply to obtain new composition data, there could be difficulties for the NAS Macronutrient Committee in trying to set a DRI for fiber. Since nearly all government entities and labeling authorities around the world use the AOAC Official Methods for labeling, it is a step in the wrong direction to suggest methods that are no more accurate and fail to promote international harmonization.
- 6.) For the industry, there may be **little incentive to formulate foods with ‘added fiber’** as the consumer may perceive it as being somehow inferior. We strongly recommend for both the consumer and the industry that **dietary fiber remain a single entity and that all fiber is treated equally for labeling purposes**.
- 7.) Finally, it is our contention is that definitions for fiber should accurately define the macrocomponent, thus providing a means to enhance dietary guidance by creating a better understanding of its value by both nutritional educators and consumers. This enhanced awareness allows a more constructive means to increase the volume of good tasting high fiber containing food delivery systems that have the potential to increase fiber intake.

## Summary

In summary, we are concerned that the proposed NAS definition will impede enhancement of the food supply possible through the addition to food of beneficial dietary fiber sources and will not help consumers make better food choices. It is our fear that the proposed definition will neither help nutrition education nor improve consumer choice while reducing the value of the dietary fiber research carried out in the past several decades. Therefore, we ask the FNB consider not creating a definition with the three entities ‘added fiber’ and ‘dietary fiber’ and ‘total fiber’ and strongly reconsider adopting the AACC definition for the reasons stated in the letter.

(The writing of this response was done with the help of many participants from the AACC Dietary Fiber definition committee—Dr. Dennis Gordon, Dr. Mary Ellen Camire, Dr. Stuart Craig, Dr. Jon DeVries, Dr. David Lineback, and Dr. Bryan Tunland.)