Probiotics: Scientific Support for Use

Preventing or reducing the risk of disease is preferable to treating disease. Probiotics have emerged as the major nutritional factor influencing gastrointestinal physiology and function. This development introduces many challenges, but also creates new opportunities for food and nutrition scientists to improve food quality and develop new products with specific health benefits for different subpopulations (Diplock et al., 1999).

As the IFT Scientific Status Summary—“Probiotics” (pages 67 - 77), prepared for IFT’s Expert Panel on Food Safety and Nutrition by Mary Ellen Sanders—clearly points out, this is a novel area that enhances our understanding of the functions of intestinal microflora and the use of probiotic microorganisms to improve our well being. Strong international collaboration has created respected research teams in the United States, Europe, and elsewhere. The tradition of using probiotic microorganisms to promote human health is now backed by strong scientific evidence for some clearly defined and well-characterized strains. There is still a need, however, to focus on the mechanisms of both gastrointestinal diseases and probiotic action. Questions about differences among microbial strains in adhesion, adhesion receptors, and competitive exclusion of pathogens, and importance of microbial viability for health effects also require further study. These and other pertinent questions are discussed in the Scientific Status Summary.

Probiotics have been recently defined as viable microorganisms that are beneficial to human health. The health effects must be demonstrated in well designed human studies (Salminen et al., 1998). Although the importance of viability has been raised, all current probiotic products are based on viable microorganisms (Ouwehand and Salminen, 1998; Salminen et al., 1999). Several microbial strains are now well characterized, i.e., their properties have been well defined, exact genetic identification established, and efficacy has been validated by extensive human studies. Because probiotic strains are unique, even closely related strains may have significantly different health properties and technological behavior. Thus, each strain has to be studied individually.

At present, good clinical documentation exists for the use of specific probiotics in both preventing and treating some forms of diarrhea. Extensive data is available for infant diarrhea and new nutritional products have been developed. Scientific evidence also exists for additional types of probiotic benefits—alleviation of the symptoms of lactose intolerance, regulation of bowel movements, and decrease of harmful enzyme activities in the intestine. Mycotoxin binding and modification of the unculturable part of the human intestinal microflora, as well as prevention and treatment of food allergy are areas that are intensively studied.

As our understanding of gastrointestinal diseases increases, the use of probiotics may offer new possibilities for food product development in functional foods for specific diseases, clinical nutrition products (e.g., infant formulas), and enteral nutrition products. The Scientific Status Summary emphasizes that scientific documentation is available to direct efforts to specific microbial strains and specific target subpopulations. However, characterization of novel selection criteria for new strains is needed to allow further probiotic development.

The future success of probiotics clearly depends on extensive cooperation in an area requiring new ideas from food technologists, strong support from medical and nutrition scientists, and an understanding of current and future food and health needs from consumer information experts. In other words, probiotics present a positive challenge for us all to create new ideas and products through multidisciplinary teamwork. The IFT Scientific Status Summary provides us a solid basis on which to build on the tradition—application of science to the successful development of new products that contribute to our future well being by preventing gastrointestinal problems and reducing the risk of disease.

REFERENCES


