

In your future: More healthful foods to nourish the non-human you

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The focus of nutrition for good health is quietly shifting to include consumption of food ingredients specifically designed to nourish the *non-human* cells that comprise 80 percent of the cells in the typical person, an authority on the topic said here today.

Speaking at the 244th National Meeting & Exposition of the American Chemical Society, Robert Rastall, Ph.D., cited several factors driving these so-called "prebiotic" ingredients toward more foods. [Food](#) scientists, for instance, are developing new sources of the healthful substances for use in a variety of foods, and scientific evidence on the benefits of eating prebiotics is growing.

"Just as people need food to thrive, so do the billions of healthful bacteria that live in our guts, our gastrointestinal tract," Rastall explained. "There's a large and expanding body of scientific evidence that bacteria in the gut play a role in health and disease. Prebiotics are foods that contain nutrients that support the growth and activity of these friendly bacteria."

Rastall contrasted prebiotics to the more familiar "probiotics," already being promoted on the labels of food like yogurt and some dietary supplements. He heads the Department of Food and Nutritional Sciences at the University of Reading in the U.K. and is co-author of widely used textbooks on prebiotics and probiotics.

Probiotic foods actually contain friendly bacteria like *Lactobacillus*

acidophilus believed to release healthful substances as they grow in the GI tract. Prebiotics are indigestible [food ingredients](#) that provide no [nutrition](#) to people. Their purpose is to nourish the friendly bacteria among the estimated 100 trillion microbes living inside the human GI tract.

Foods promoted for a prebiotic effect already are on the market in the European Union, and Rastall predicted that prebiotics will gain a greater foothold in Europe and the United States. One major advantage: Prebiotics do not require refrigeration like probiotic yogurt and other dairy products and could be incorporated into a wider range of foods.

Rastall noted that people get small amounts of one of the most common prebiotics, called inulin, from wheat, onions, garlic, chicory and certain other foods. He cited studies showing that when people eat more inulin and other prebiotics, the balance of microbes in the gut shifts to one linked to a range of health benefits.

To help people get more prebiotics in their diet, Rastall's team in the U.K., working with colleagues at the U.S. Department of Agriculture's Agricultural Research Service, is finding ways to make prebiotics from plant carbohydrates like pectins, mannans and xylans.

They are using plant biomass, like stems and husks, as sources for those carbohydrates, which then are converted to the shorter carbohydrates that make up prebiotics. The goal is preparation of prebiotic carbohydrates that have neutral tastes and can withstand heating so they could be easily added to processed foods. These new prebiotics also could be used as stand-alone dietary supplements, he added.

"Prebiotics may prove to be most useful in specific population groups and people with specific health problems rather than the general population," Rastall said. He cited, for instance, individuals with

gastrointestinal diseases, Type-2 diabetes and low-grade inflammation linked to an increased risk of heart disease and other conditions, and people at risk for travelers' diarrhea.

More information:

Abstract

The idea that the vastly complex microbial ecosystem in the human colon has a profound impact on health is now gaining widespread acceptance in the scientific community and with the food and healthcare industries. Recent research is illuminating the intricate interactions between microbes in the colon, their metabolites and human metabolism. Prebiotics are selectively fermented oligosaccharides that modulate these interactions in the bacterial microbiome to improve health status. The concept is an attractive one from the perspective of the food industry and there is much potential in deriving novel prebiotic oligosaccharides from plant cell wall polysaccharides. This presentation will examine what we mean by a prebiotic and give a critical overview of the status of the science supporting the health benefits. The properties of current plant derived prebiotic oligosaccharides will be discussed and recent data evaluating the potential to derive prebiotics from starch, pectins, mannans and xylans will be presented.

Provided by American Chemical Society

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