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Health Options
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# Digestive enzymes, prebiotics and probiotics key to nutrition

Good nutrition starts with consuming and absorbing more than 40 essential vitamins, minerals, protein and fat components. What sometimes might seem like a simple process involves many types of digestive enzymes, probiotics and prebiotics.

**Question:** What is the difference between digestive enzymes, probiotics and prebiotics?

**Answer:** Getting nutrients out of food and absorbed into the body involves the complex process of digestion. First, food ingredients are taken apart by stomach acid and specialized proteins called digestive enzymes. These smaller food components are then absorbed across the intestinal wall and transported throughout the body to repair or build new tissue and perform thousands of other functions. Specific digestive enzymes help the body process fats, carbohydrates and proteins.

The digestion and absorption process requires maintaining healthy intestinal cells and a well-balanced mix of beneficial microorganisms — often referred to as a healthy microbiome. Probiotics provide beneficial organisms that can promote health in the lower part of the intestine. Prebiotics are food components that escape digestion in the upper intestine and essentially feed the microbiome. Overall, this combination of enzymes, probiotics and prebiotics support digestion and absorption of nutrients.

**Q:** What foods contain digestive enzymes, prebiotics or probiotics?

**A:** Some foods that contain digestive enzymes for protein are pineapple, papaya, kiwi and ginger. Mango and banana contain an enzyme that converts starch to sugar. The effects of these enzymes are minor compared with the digestive enzymes typically produced internally by the body. Prebiotics are generally present in fiber--rich foods such as fruits, vegetables, whole grains, beans and nuts. Probiotic bacteria are found in cultured and fermented foods such as yogurt, kefir, poi, kimchi and sauerkraut. Some foods are considered both prebiotic and probiotic.

**Q:** Can taking supplemental digestive enzymes, prebiotic or probiotic products improve gut health?

**A:** Many healthy individuals do not require digestive enzymes. For lactose--intolerant individuals, taking the enzyme lactase immediately before consuming dairy products digests the milk sugar lactose and prevents symptoms of lactose intolerance. In addition, the product Beano is an enzyme product that can decrease gas by breaking down complex carbohydrates found in foods such as beans, some vegetables and whole grains. Gluten-degrading enzymes are a promising thera- peutic approach for gluten intolerance but not yet for celiac disease.

Other digestive enzyme products are available, but their benefits are less predictable.

The effect of prebiotic- and probiotic--containing foods and supplements can vary from one person to another. Some of that may be due to the uniqueness of an individual's microbiome. It could also be related to the wide-ranging composition and strength of prebiotic and probiotic supplements.

Many probiotic supplements need refrigeration, which could affect quality if not kept properly. Consuming foods promoting a healthy gut may be a more reliable source to promote a healthy microbiome..

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