

# Beta-glucan-enriched pasta boosts good gut bacteria, reduces bad cholesterol

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People fed  $\beta$ -glucan-enriched pasta for two months showed increased populations of beneficial bacteria in their intestinal tracts, and reduced populations of non-beneficial bacteria. They also showed reduced LDL (bad) cholesterol. This work is part of a broad effort to identify potential prebiotics—foods that could encourage the growth of health-promoting bacteria in the gastrointestinal tract. The research is published September 18, in *Applied and Environmental Microbiology*, a journal of the American Society for Microbiology.

$\beta$ -glucans are healthy fibers that humans cannot digest, but that can be digested by some species of our [gut bacteria](#). They are special types of sugars that are found in the cell walls of certain microbes, as well as in oats and barley.  $\beta$ -glucans are used clinically against diabetes, cancer, and high cholesterol, as well as to boost the immune systems of people whose immunity has been compromised by radiation, chemotherapy, stress, and other conditions.

The investigators hypothesized that by feeding study subjects  $\beta$ -glucan-enriched pasta, they could modify the species composition of the gut bacteria, possibly leading to improved human health, said coauthor Maria De Angelis, PhD, Professor in the Department of Soil, Plant and Food Sciences, University of Bari Aldo Moro, Bari, Italy.

In the study, the investigators took fecal and [blood samples](#) before and after the study subjects spent two months on diet that included  $\beta$ -glucan-enriched pasta. At the study's end, assays of the fecal samples showed a notable increase in beneficial Lactobacilli, and a reduction in Enterobacteriaceae, and other non-[beneficial bacteria](#) in subjects' gastrointestinal tracts. The investigators also discovered an unanticipated rise in the concentration of certain short chain fatty acids, 2-methyl-propanoic, acetic, butyric, and propionic acids, bacterial metabolites, for which there is evidence of anti-inflammatory activity.

From the blood samples, the investigators determined that the average LDL cholesterol among the study subjects had fallen from 107.4 to 93.8 MG/DL.

The  $\beta$ -glucan-enriched pasta made from a mixture of 75 percent durum wheat flour and 25 percent whole grain barley flour. The daily dose of pasta, 100 grams, contained 3 grams of barley  $\beta$ -glucans, the recommended daily dose in the US and in Europe.

"These results highlight the influence of fibers and of the Mediterranean diet on gut microbiota, and indirectly on [human health](#)," said De Angelis.

Provided by American Society for Microbiology

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