

# The Nutrition Reporter™

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## Probiotics – Good Bacteria – Help Maintain Our Health in Many Ways

Our digestive tract contains a teeming city of beneficial bacteria – with a population that’s 10 times larger than all the cells in our body. It is a true symbiotic relationship, one that can positively influence our health while we provide a supportive environment to these microorganisms.

Doctors have known for years that these “probiotics” make tiny amounts of some vitamins and can help prevent diarrhea. But the latest research shows that their positive effects on our health may be far greater – influencing how we fare as we age, preventing potentially deadly bacterial infections, and maybe even affecting our weight.

In a recent article Patrizia Brigidi, PhD, and her colleagues at the University of Bologna, Italy, reviewed some of the benefits of maintaining a healthy population of gut bacteria. After all, as Brigidi, wrote, “Microbes are our life-long companions.”

But as we age, the dominant species of gut bacteria often shift. For example, *Firmicutes* species, which have anti-inflammatory benefits, tend to decrease, while *Bacteroidetes* species increase. Indeed, some of the beneficial bacteria produce butyrate, a substance that has antiinflammatory and anticancer benefits.

Citing an animal study, Brigidi noted that *Bifidobacterium lactis* supplements increased longevity in mice, apparently by reducing the age-promoting effects of inflammation.

Animal and some human studies have found that the predominant species of gut bacteria are very different between overweight and normal weight individuals. It has not been clear whether the differences contribute to obesity or are a consequence, although eating habits do seem to influence the types of bacteria present in the gut.

Peter J.H. Jones, PhD, of the University of Manitoba, Canada, and his colleagues tested two types of “novel probiotics” on 28 overweight men

and women. The subjects ate the same diet, and the probiotics were consumed in yogurt.

People in the study consumed each of the two probiotics – *Lactobacillus amylovorus* and *L. fermentum* – for 43 days, as well as a “control” yogurt for the same period of time. The three study phases was separated by a six-week period in which none of the subjects were given yogurt.

Men and women getting *L. amylovorus* lost an average 4 percent of their body weight over a 43-day period, while *L. fermentum* led to a 3 percent decrease in body weight. When the subjects ate the standard yogurt in the crossover study, they lost only 1 percent of their body weight.

Another group of Canadian researchers analyzed data from 20 human studies, including 3,818 people, in which probiotics were given to prevent *Clostridium difficile* infection after using antibiotics.

Oral antibiotics disrupt the bacterial environment of the gut, leading to diarrhea, colitis, and sometimes death. *C. difficile* is a toxic species of bacteria that often fills the probiotic void created by antibiotics.

Bradley C. Johnston, PhD, of the Hospital for Sick Children Research Institute, Toronto, found that consuming probiotics reduced the risk of *C. difficile*-related diarrhea by 66 percent.

In a separate analysis, Marina L. Ritchie, PhD, of Dalhousie University, Nova Scotia, Canada, looked at the benefits of probiotics in a variety of gastrointestinal diseases, include antibiotic-associated diarrhea, infectious diarrhea, irritable bowel syndrome, *C. difficile* infection, among others.

According to Ritchie, probiotics were helpful in resolving most of the gastrointestinal problems, except for “traveler’s diarrhea.”

Finally, Lyudmila Boyanova, MD, and Ivan Mitov, MD, of the University of Sofia, Bulgaria, discussed the specific use of probiotics in the journal *Expert Review of Anti-Infective Therapy*.

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They wrote that probiotics can prevent or reduce antibiotic- and *C. difficile*-associated diarrhea. “For this purpose, *L. rhamnosus GG* and *Saccharomyces boulardii* [a beneficial yeast] are used, the latter inhibiting *C. difficile* toxic effects.”

Boyanova and Mitov added, “Probiotics are often prescribed for one to three weeks longer than the duration of antibiotic treatment. They should be taken with food because the increased gastric pH is more favorable for the probiotics.”

References: Biagi E, Candela M, Turroni S, et al. Ageing and gut microbes: perspectives for health maintenance and longevity. *Pharmacological Research*, 2012: doi 10.1016/j.phrs.2012.10.005. Omar JM, Chan YM, Jones ML, et al. *Lactobacillus fermentum* and *Lactobacillus amylovorus* as probiotics alter body adiposity and gut microflora in healthy persons. *Journal of Functional Foods*, 2012: epub ahead of print. Johnston BC, Ma SS, Goldenberg JZ, et al. Probiotics for the prevention of *Clostridium difficile*-associated diarrhea: a systematic review and meta-analysis. *Annals of Internal Medicine*, 2012: epub ahead of print. Ritchie ML, Romanuk TN. A meta-analysis of probiotic efficacy for gastrointestinal diseases. *PLoS One*, 2012, 2012: doi 10.1371/journal.pone.0034938. Boyanova L, Mitov I. Coadministration of probiotics with antibiotics: why, when and for how long? *Expert Review of Anti-Infective Therapy*, 2012;10:407-409. □

## Perspectives

### New Warnings About Grapefruit

I really like eating grapefruit and drinking grapefruit juice, but I now shy away from them. The reason is that grapefruit and some related citrus fruits contain compounds that alter how the body breaks down many drugs.

About half of all drugs are broken down by a single gut and liver enzyme known as CYP3A4. According to a new report (Bailey DG, *CMAJ*, 2012: doi 10.1503/cmaj.120951) the furanocoumarins in grapefruit deactivate CYP3A4 and allow blood levels of more than 85 commonly prescribed drugs to rise to potentially dangerous levels in the blood. Sometimes the consequences can be very serious, causing sudden death, muscle wasting, kidney disease, and possibly breast cancer. Still other drugs are likely to interact with grapefruit – they just have not yet been identified yet.

People over age 45 have the highest risk because they consume the most grapefruit juice and also take the most prescription drugs. Intravenous drugs do not interact with grapefruit.

Seville oranges (often found in marmalades), limes, and pomelos also contain furanocoumarins.

To see a full listing of drugs known to interact with grapefruit, visit: <http://www.cmaj.ca/content/suppl/2012/11/26/cmaj.120951.DC1/grape-bailey-1-at.pdf> –JC

### Eating More Legumes Benefits People with Type 2 Diabetes

Protein-rich diets can quickly improve blood sugar levels in people with type 2 diabetes. But some people are vegetarians, and others cannot always afford quality proteins, such as fish.

In a new study, eating at least one cup of legumes daily led to significant improvements in blood sugar and modest improvements in blood pressure.

David J.A. Jenkins, MD, of the University of Toronto, Canada, and his colleagues asked 121 men and women with type 2 diabetes to adopt a low-glycemic diet that encouraged consumption of cooked beans, chickpeas, or lentils. Alternatively, some of the subjects were asked to increase their consumption of insoluble fiber by eating whole-wheat products.

The participants’ glycated hemoglobin (HbA1c) was measured at the beginning of the study and again at three months. An HbA1c of 7% or higher is considered an indicator of diabetes.

People eating legumes benefited from an average 0.5% decrease in HbA1c and a 4.5 mm Hg decrease in systolic blood pressure. Those who ate more whole-wheat foods benefited but not by as much.

Reference: Jenkins DJ, Kendall CW, Augustin LS, et al. Effect of legumes as part of a low glycemic index diet on glycemic control and cardiovascular risk factors in type 2 diabetes. *Archives of Internal Medicine*, 2012: doi: 10.1001/2013.jamainternmed.70 □

### Taking Daily Multivitamin Reduces Men’s Risk of Cancer

Taking a multivitamin and multimineral supplement each day can reduce a man’s risk of developing cancer by 8 percent. While that might not sound like much, if every adult man in the United States took a multi, the incidence of cancer would decrease by tens of thousands each year.

J. Michael Gaziano, MD, of the Harvard Medical School and his colleagues asked 14,641 male physicians to take either a multivitamin/multimineral supplement or placebo daily for an average of 11 years. The study included 1,312 men who had already been diagnosed with cancer.

The 8 percent reduction in risk reflected a decrease in cancer diagnoses overall. The researchers did not find a specific reduction in the diagnosis of prostate cancer.

Reference: Gaziano JM, Sesso HD, Christen WG, et al. Multivitamins in the prevention of cancer in men. The physicians’ health study II randomized controlled trial. *JAMA*, 2012;308: doi 10.1001/jama/2012.14641. □

## Curcumin Better than Drug in Easing Rheumatoid Arthritis

Curcumin, an extract of turmeric root, is a powerful natural anti-inflammatory substance. A new study has found that curcumin supplements work better than a common drug used to treat rheumatoid arthritis.

Binu Chandran, MD, of the Normala Medical Centre, India, and Ajay Goel, PhD, of Baylor University, Dallas, treated 45 patients with rheumatoid arthritis. The patients were given 500 mg of curcumin, 50 mg of diclofenac sodium, or a combination of both twice daily for eight weeks. Two common clinical tests were administered at the beginning and end of the study to chart changes in disease activity.

All three groups of patients improved, but “the curcumin group showed the highest percentage of improvement” in scores on the clinical tests, according to the researchers.

“More importantly, curcumin treatment was found to be safe and did not relate with any adverse events,” they wrote. “Our study provides the first evidence for the safety and superiority of curcumin treatment in patients with active rheumatoid arthritis, and highlights the need for future large-scale trials to validate these findings in patients with RA and other arthritic conditions.”

The researchers used a type of bioavailable curcumin known as BCM-95®, which is sold as a supplement in the United States.

Reference: Candran B, Goel A. A randomized, pilot study to assess the efficacy and safety of curcumin in patients with active rheumatoid arthritis. *Phytotherapy Research*, 2012: doi 10.1001/ptr.4639. □

## Prenatal Mercury and Fish Consumption Influence ADHD

Prenatal exposure to low levels of mercury increases a child’s later risk of attention-deficit hyperactivity disorder (ADHD), while prenatal exposure to the nutrients in fish protects against ADHD, according to a new study.

The findings appear contradictory because some types of fish are significant sources of mercury. But as other studies have shown, the benefits of consuming fish outweigh the risks.

Sharon K. Sagiv, PhD, of the Boston University School of Public Health, and her colleagues analyzed mercury levels in samples of hair from 421 pregnant women, as well as maternal reports of fish consumption from 515 pregnant women.

Higher levels of mercury in mothers’ hair were consistently related to ADHD behavior in children, particularly inattention, hyperactivity, and impulsivity, based on teachers’ observations.

In contrast, when pregnant women ate at least two servings of fish each week, their children had a 60 percent lower risk of ADHD behavior.

*Editor’s note:* The apparent contradiction might be explained by the types of fish pregnant women consumed. Tuna and swordfish tend to be high in mercury, whereas salmon, herring, and sardines are relatively low in mercury. As a general rule, smaller fish are lower on the food chain and contain less mercury.

Reference: Sagiv SK, Thurston SW, Bellinger DC, et al. Prenatal exposure to mercury and fish consumption during pregnancy and attention-deficit/hyperactivity disorder-related behavior in children. *Archives of Pediatric and Adolescent Medicine*, 2012: doi 10.1001/archpediatrics.2012.1286. □

## High Intake of Lycopene May Lower Stroke Risk in Men

Eating tomatoes and other lycopene-rich foods might reduce the risk of stroke, according to a study conducted in Finland.

Jouni Karppi, PhD, and his colleagues analyzed data on 1,031 men ages 46 to 65 years when the study began. Blood tests had determined the levels of lycopene and other carotenoids among the men.

Over 12 years of follow up, 67 of the men suffered a stroke. Most of the strokes were of the ischemic type, which involves a blood clot.

Men with the highest levels of lycopene were 59 percent less likely to have an ischemic stroke and 55 percent less likely to have any other type of stroke.

Although lycopene might be protective by itself, it’s likely that lycopene-rich foods provided other important nutrients. Other foods containing lycopene include guava, watermelon, and red-fleshed papaya.

Reference: Karppi J, Laukkanen JA, Sivenius J, et al. Serum lycopene decreases the risk of stroke in men. *Neurology*, 2012;79:1540-1547. □

## Mistletoe May Improve Quality of Life in Stomach Cancer Patients

True mistletoe – *Viscum album L.* – can be helpful to patients with stomach cancer, particularly after surgery, and possibly to people with other types of cancer.

Also known as European or common mistletoe, *Viscum album L.* does not grow wild in the United States. It is native to Europe and southern Asia.

Roman Huber, MD, of University Medical Center,

## Quick Reviews of Recent Research

### • Fish oils helpful in sickle cell anemia

Sickle cell anemia is a genetic defect affecting mostly people of African ancestry. It causes abnormal blood clotting, and inflammation plays a key role in the disease process. A team of researchers from the United Kingdom and Sudan treated 140 patients with one to four capsules of omega-3 supplements or placebos daily for one year. Each capsule provided 278 mg of docosahexaenoic acid (DHA) and 39 mg of eicosapentaenoic acid (EPA). Patients age 17 and older received the highest dose of fish oils. The supplements reduced the number of blood clots, degree of anemia, and need for blood transfusions. In addition, student participants lost fewer days of school.

Daak AA. *American Journal of Clinical Nutrition*, 2012; doi 10.3945/ajcn.112.036319.

### • Flavonoid intake may reduce stomach cancer

A multinational team of European researchers analyzed 11 years of dietary data from 477,312 men

and women. Total flavonoid intake was related to a 19 percent lower risk of stomach cancer in women, but not in men. Flavonoids are antioxidant plant pigments found in fruit, and the study's finding may have been a marker for fruit consumption.

Zamora-Ros R. *American Journal of Clinical Nutrition*, 2012; 10.3945/ajcn.112.037358.

### • Fructose linked to diabetes risk

Nations with the greatest consumption of high-fructose corn syrup have a higher incidence of type 2 diabetes, according to a study by British and American researchers. Nations whose people consumed the most high-fructose corn syrup has a 20 percent higher risk of diabetes. The United States consumes more of this sweetener than does any other nation.

Ulijaszek S. *Global Public Health*, 2012; doi 10.1080/17441692.2012.73625.

### • Curcumin potentially beneficial in cancer

Curcumin supplements are being investigated in human studies for their benefits as a complementary cancer treatment. Researchers at Bowling Green State University, Ohio, conducted a study on curcumin with human esophageal cancer cells. The rationale for this study was that many cancers contain stem cells, which are resistant to chemo and radiation therapies. Curcumin destroyed cancer cells, with larger amounts destroying more of the cells.

Almanaa TN. *BMC Complementary and Alternative Medicine*, 2012;12:195.

### • Music can make surgery less stressful

A simple nonpharmacological intervention can reduce anxiety and pain related to surgery. In an analysis of published studies, researchers at the University of Kentucky described numerous studies showing how music can reduce anxiety before surgery, pain after surgery, and speed recovery.

Gooding L. *Southern Medical Journal*, 2012;105:486-90.

## Mistletoe and Cancer...

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Freiburg, Germany, and his colleagues treated 32 cancer patients after they underwent surgery. They were then given chemotherapy, but some of the patients were also given a standardized extract of mistletoe.

The stress of surgery typically suppresses the immune system, but two types of immune cells – leukocytes and eosinophils – increased significantly among patients getting mistletoe extract. Only one person getting mistletoe developed diarrhea, compared with half of those not receiving the herb.

Most significantly, the overall quality of life was much better among people getting mistletoe, compared with patients who received only conventional treatments.

In a separate study, another team of German researchers conducted a cell study to determine how a fermented mistletoe extract works against glioblastoma, a type of brain cancer. They reported that the mistletoe extract increased the activity of natural-killer cells, a type of immune cell, leading to the destruction of glioblastoma cells.

References: Kim KC, Yook JH, Eisenbraun J, et al. Quality of life, immunomodulation and safety of adjuvant mistletoe treatment in patients with gastric carcinoma - a randomized, controlled pilot study. *BMC Complementary and Alternative Medicine*, 2012;12:172. Podlech O, Harter PN, Mittlebronn M, et al. Fermented mistletoe extract as a multimodal antitumoral agent in gliomas. *Evidence-Based Complementary and Alternative Medicine*, 2012; doi 10.1155/2012/501796. □

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