

# The Nutrition Reporter™

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## Grass-Fed Beef: A Good Source of Omega-3s and Other Nutrients

Salmon and other types of coldwater fish are recognized as rich sources of two key omega-3 fats, specifically eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Both EPA and DHA have numerous health benefits in reducing inflammation, protecting the heart, and maintaining healthy moods.

But beef from grass-fed cattle also contains ample amounts of EPA and DHA. While it does not contain quite as much EPA and DHA (ounce for ounce), grass-fed beef contains many other nutrients as well – and is much healthier than grain-fed beef.

Until the 1940s, nearly everyone ate beef that came mostly from grass-fed (or range-fed) animals. Grasses are high in alpha-linolenic acid, which ruminants efficiently convert to EPA and DHA. During the 1950s, however, cattle were increasingly fed grains to promote faster weight gain and more intramuscular fat, known as marbling.

The shift from grass-fed to grain-fed changed the fat profile of meats and, not surprisingly, has had health consequences. One of the changes is that the amount of anti-inflammatory omega-3 fats has decreased, while some saturated fats and pro-inflammatory omega-6 fats have increased.

In a recent comparison of grass-fed and grain-fed beef, Cynthia A. Daley, PhD, and her colleagues at California State University, Chico, reported that beef from grass-fed cattle was almost always nutritionally superior to meat from grain-fed cattle.

In Daley's analysis of seven studies, grass-fed beef had consistently higher levels of EPA and DHA, gram for gram, compared with grain-fed beef. Conversely, grain-fed beef had low to negligible amounts of EPA and DHA.

Historically, people consumed an omega-6 to omega-3 ratio ranging from 1:1 to 4:1. The typical American diet now provides an 11:1 to a 30:1 ratio of omega-6s to omega-3s, a shift that is related to an increase in inflammatory diseases.

Grass-fed beef approximates the more traditional and healthier ratio of approximately equal amounts of omega-6 and omega-3 fats. In contrast, the omega-6 to omega-3 ratio in grain-fed beef is 7:1.

Grass-fed beef also contains larger amounts of conjugated linoleic acids (CLA), a type of fat that may have benefits in reducing both weight and cancer risk. When cattle are fed grains, the types of CLA shift to less healthy forms.

Although grass-fed and grain-fed beef contain approximately the same amounts of saturated fat, ounce for ounce, the composition of that fat is significantly different. Grass-fed beef has a higher proportion of stearic acid, which does not affect cholesterol levels. Meanwhile, grain-fed beef is higher in myristic and palmitic acids, two saturated fats that do raise cholesterol levels.

In addition, the fat in grass-fed beef contains more vitamin E, beta-carotene, and glutathione, compared with grain-fed beef. Grain-fed beef, however, contains substantially more oleic acid, a healthy fat also found in olive oil.

Reference: Daley CA, Abbott A, Doyle PS, et al. A review of fatty acid profiles and antioxidant content in grass-fed and grain-fed beef. *Nutrition Journal*, 2010;9:10. □

### Perspectives

#### How Nature Can Help Nurture

Over the past few months, a number of health writers have referred directly or indirectly to "Vitamin N." The N stands for nature.

It turns out – no big surprise, really – that people who are constantly connected to their electronics (email, smart phones, texting) suffer from a lack of down time. And the problem isn't just with adults, but with children and teenagers who can also be compulsive users of text mail.

Many adults constantly multitask and, as a consequence, have very little downtime. Staying

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connected to the digital world becomes a stress.

A recent article noted that constant use of technology creates anxiety and inhibits deep contemplative thought. In fact, it often seems as though people will do anything to avoid being alone with their own thoughts.

Spending a little time in nature can help restore a balance. But sometimes it's hard to disconnect. When I'm out hiking, I often see school groups. Standing in the middle of a magnificent landscape, there are usually at least a couple of kids with their eye glued to text messages, not the mountains.

Sometimes it takes a few days to recalibrate oneself. I find this to be the case when I go on a vacation where I can't check voice messages or emails. A few days pass, and I'm more in sync with life on the road or on a boat. I stop missing and worrying about my email.

And every now and then, disconnecting reminds me of what's important. For example, I've done a lot of travel this year to lecture about nutrition, and one of my other passions, photography, suffered from a lack of time. I took an afternoon off to photograph wildflowers and waterfalls in the mountains – and realized that I had forgotten part of what provides balance in my life. That afternoon helped reconnect me to the natural environment – vitamin N – instead of the artificial one we're usually connected to. –*JC*

## **Omega-3 Fish Oils Help People with "Neuropathic" Pain**

The omega-3 fish oils are well-documented for their benefits in inflammatory pain – after all, they are the precursors to a variety of anti-inflammatory substances, including prostaglandin E3. But some types of pain are related to nerve, or neuropathic, disease, in which inflammation may play a lesser or different role.

In a recent report, a group of Canadian doctors and researchers reported the successful treatment of five patients with various types of neuropathic pain, including fibromyalgia, carpal tunnel syndrome, nerve compression, slipped disc, and burn injury.

Gordon D. Ko, MD, of the Canadian Centre for Integrative Medicine, in Markham, Ontario, and his colleagues treated the patients with very large amounts of fish oils – 2,400 to 7,200 mg daily of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

One of the patients, a 50-year-old man was diagnosed with a herniated disc, started taking 4,800 mg of EPA and DHA (combined dosage) and

increased the amount to 7,200 mg daily. He had such dramatic relief that he was able to have pain-free workouts at the gym. He also noted feeling clear-headed and having sharper cognitive function.

When Ko submitted his report for publication, the patients had been taking fish oil capsules for four to 17 months.

"It should be noted that omega-3 fatty acids are just one component of an overall integrative medical approach in treating pain and optimizing wellness," wrote Ko. The other components should include lifestyle changes, improved eating habits, weight loss, stress reduction, better sleep habits, and a positive (as opposed to negative) outlook.

Reference: Ko GD, Nowacki NB, Arseneau L, et al. Omega-3 fatty acids for neuropathic pain. *Clinical Journal of Pain*, 2010;26:168-172. □

## **Vitamin C Supplements Boost Moods of Hospitalized Patients**

Modest amounts of vitamin C can improve the moods of patients hospitalized for a variety of diseases, including cancer, heart disease, diabetes, and infections.

L. John Hoffer, MD, PhD, of McGill University, Montreal, noted that an earlier study found that 60 percent of patients in an acute medical ward of a teaching hospital had low to deficient levels of vitamin C, compared with just 16 percent of outpatients.

In Hoffer's latest study, patients' moods were assessed with the Profile of Mood States (POMS) questionnaire, which gauges their levels of anger, anxiety, depression, and other moods.

The patients were given 500 mg of vitamin C twice daily or 1,000 IU of vitamin D daily.

Patients getting the vitamin C benefited from a 34 percent reduction in mood problems. The vitamin D did not have a significant effect, possibly because many of the patients had already been taking the vitamin.

Reference: Zhang M, Robitaille L, Eintracht S, et al. Vitamin C provision improves mood in acutely hospitalized patients. *Nutrition*, 2010; epub ahead of print. □

## **Vitamins and Minerals Counter Stress Feelings from Multitasking**

Multitasking is a stress, but taking a multivitamin/multimineral supplement can help keep people from stressing out.

David O. Kennedy, PhD, of Northumbria University, Newcastle, England, and his colleagues tested the effects of multitasking on 216 women

ranging from 25 to 50 years of age. The participants took a computer-based multitasking test, in which they had to work on several unrelated tasks simultaneously. Then, before the next multitasking test, the women were asked to take either a multivitamin supplement or placebo daily for nine weeks.

Women taking the vitamins were able to multitask faster and more accurately, and they experienced less fatigue and moodiness.

Kennedy wrote that the B vitamins and other nutrients play essential roles in the production and regulation of neurotransmitters, the chemicals that influence moods. He added that a “sizeable proportion” of people are marginally deficient in one or more of these nutrients.

The supplement used in this study contained about three times the governmental recommended amounts of water-soluble vitamins, but more modest amounts of fat-soluble vitamins and minerals.

Reference: Haskell CF, Robertson B, Jones E, et al. Effects of a multi-vitamin/mineral supplement on cognitive function and fatigue during extended multitasking. *Human Psychopharmacology*, 2010;25:448-461. □

## Ample Intake of Selenium May Lower Risk of Bladder Cancer

Eating a diet rich in selenium appears to reduce the risk of bladder cancer, especially in women.

Nuria Malats, MD, PhD, of the Spanish National Cancer Research Center, Madrid, and her colleagues analyzed the findings of seven previously published studies on selenium and bladder cancer. Those studies collectively included almost 20,000 people.

Overall, people with a high dietary intake of selenium had a 39 percent lower risk of developing bladder cancer. However, women seemed to benefit far more than did men; women had a 45 percent lower risk of bladder cancer if their diets contained a lot of selenium.

Selenium is an essential dietary mineral and is needed to make glutathione peroxidase, an antioxidant enzyme that is also involved in detoxifying hazardous compounds.

Reference: Amaral AF, Cantor KP, Silverman DT, et al. Selenium and bladder cancer risk: a meta-analysis. *Cancer Epidemiology, Biomarkers and Prevention*, 2010;19:2407-2415. □

## A Little Green Tea Each Day Reduces DNA Damage in People

Drinking green tea can substantially reduce genetic damage within four weeks. The benefits would, at least theoretically, slow age-related DNA

damage and reduce the long-term risk of cancer.

Iris F. Benzie, MD, of the Hong Kong Polytechnic University and her colleagues conducted two studies on green tea, one on people and another in white blood cells.

Eighteen healthy people were randomly asked to consume two different types of green tea or water – five ounces twice daily for four weeks each. Each phase of the study was separated by a six-week period when they did not consume the green teas.

When the subjects consumed either of the green teas, they had 20 percent reduction in DNA damage, based on an analysis of their cells using the comet assay technique. In the other study, cells were exposed to green tea, and Benzie reported that they became more resistant to DNA damage.

She added, “The results indicate that green tea has significant genoprotective effects and provide evidence for green tea as a ‘functional food’.”

Reference: Han KC, Wong WC, Benzie IFF. Genoprotective effects of green tea (*Camellia sinensis*) in human subjects: results of a controlled supplementation trial. *British Journal of Nutrition*, 2010; doi 10.1017/S007114510003211. □

## Vitamin D May Protect Brain Against Dementia and Parkinson

Two new studies strongly suggest that low levels of vitamin D may boost the risk of cognitive decline and Parkinson disease and, conversely, that high levels of the vitamin may be protective.

In the first study, David J. Llewellyn, PhD, of the University of Exeter, England, and his colleagues tracked 858 Italian adults, age 65 and older. The subjects were given several cognitive tests at the beginning of the study, three years later, and then six years after the study began. The tests focused on overall cognition, attention, and executive function (the ability to plan, organize, and prioritize).

People who had severe deficiencies in vitamin D were 60 percent more likely to experience a substantial cognitive decline over six years, as well as a 31 percent decline in executive function.

Meanwhile, a three-decade study has found that maintaining relatively high blood levels of vitamin D may reduce the risk of Parkinson disease by about two-thirds.

Paul Knecht, DPH, of the National Institute for Health and Welfare, Helsinki, Finland, and his colleagues tracked 3,173 women and men who participated in a study beginning in the late 1970s. The subjects, ages 50 to 79 years, were given physical exams and their blood levels of vitamin D were measured at that time.

## Quick Reviews of Recent Research

- **More evidence that fish oils help the heart**

Dutch researchers investigated the dietary habits and omega-3 fat intake of 21,342 men and women ranging from 20 to 65 years of age. Over 9-14 years of follow up, people with the highest intake of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) had a 62 percent lower risk of experiencing a fatal heart attack and a 49 percent lower risk of cardiovascular disease.

de Goede J. *Journal of Nutrition*, 2010;140:1023-1028.

- **Vitamin D protects muscle**

U.S. and Canadian researchers investigated blood levels of vitamin D, muscle strength, and the infiltration of fat in muscle tissue in 90 women ages 16 to 22 years. Almost two-thirds of the young women had low vitamin D levels, and one-fourth of that group had outright deficiencies. Women with low vitamin D levels were more likely to have more fat infiltration in their muscle cells, which can potentially impact strength.

Gilsanz V. *Journal of Clinical Endocrinology and Metabolism*, 2010;95:1595-1601.

- **Phosphates in soft drink pose health hazards**

Researchers at the Harvard University used mice to assess the health effects of excess phosphates (a form of phosphorus), one of the ingredients in soft drinks. Large amounts of phosphates resulted in accelerated aging, kidney disease, calcification of blood vessels, and muscle atrophy.

Ohnishi M. *FASEB Journal*, 2010; doi 10.1096/fj.09-152488.

- **Mushrooms have anti-inflammatory effect**

Various types of mushrooms have an anti-inflammatory effect, according to a cell study by an American researcher. The study found that white button, crimini, shiitake, oyster, and maitake

mushrooms reduced the activity of several types of adhesion molecules. Adhesion molecules are known to help promote inflammation.

Martin KR. *Nutrition Journal*, 2010;9:29.

- **Resveratrol may protect the eyes**

In a study using laboratory mice, American researchers found that resveratrol can help prevent the abnormal growth of blood vessels in the retina, a characteristic of some types of eye diseases. The effect was independent of resveratrol's well-established effect on the Sirt1 gene.

Khan AA. *American Journal of Pathology*, 2010;177:481-492.

- **SAME supplements ease depression**

Researchers at the Harvard Medical School tested the effects of 1,600 mg daily of S-adenosylmethione (SAME) on 39 patients being treated with medications for depression. Thirty-four other patients received placebos. Clinical tests showed that people taking SAME were about twice as likely to benefit from the supplement, compared with people taking placebos. SAME is a metabolic product of the B vitamins and amino acid methionine, and previous studies have also found it helpful in reducing depression.

Papakostas GI. *American Journal of Psychiatry*, 2010; doi 10.1076/appi.ajp.2009.09081198.

- **Vitamin C has anti-cancer effect**

Studies on cells, animals, and people have found that high-dose vitamin C can inhibit the proliferation of cancer cells. French researchers studied the effects of large amounts of vitamin C on mice with cancer, as well as on genes involved in cancer growth. The research confirmed that the high-dose vitamin C – which would be achievable through intravenous administration in people, had anti-cancer benefits.

Belin S. *PLoS One*, 2009;4:e4409.

### Vitamin D and Cognition...

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After 29 years, 50 cases of Parkinson disease had been diagnosed in the group. When Knecht analyzed patterns, he found that people with low levels of vitamin D were 67 percent more likely to develop Parkinson disease.

Knecht wrote that "Parkinson disease may be caused by a continuously inadequate vitamin D status leading to a chronic loss of dopaminergic neurons in the brain."

References: Llewellyn DJ, Lang IA, Langa KM, et al. Vitamin D and risk of cognitive decline in elderly persons. *Archives of Internal Medicine*, 2010;170:1135-1141. Knecht P, Kilkkinen A, Rissanen H, et al. Serum vitamin D and the risk of Parkinson disease. *Archives of Neurology*, 2010;67:808-811. □

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