

More Vitamins and Disease-Fighting Antioxidants How Grass Farmers Make Better Food Using Managed Grazing

Most of us have a strong desire for good health. So why do we increasingly turn to pills and processed foods for our nutritional needs? Dietary supplements and foods containing added ingredients—such cereals and energy drinks fortified with vitamins—are growing multibillion dollar industries in the United States. In 2007, sales of dietary supplements alone reached approximately \$23.7 billion.¹ Sixty-eight percent of Americans, according to the industry, take a multivitamin as “insurance to offset poor diets.”² But can lab scientists and supplement manufacturers really improve upon nature? The answer is NO—and the more we learn more about nutrition and how different components work in the human body, the clearer that answer becomes. *A balanced diet of nutrient-dense foods is the best way to maintain and improve health.* Supplements, at best, can only attempt to reproduce the nutrition in real food.

We Are What We Eat

Not all food is created equally. The nutritional content of a pork chop, a scrambled egg or a glass of milk is dependent on the nutrition available to animal that produced it. Unfortunately, most meat, egg and dairy products come from animals that are raised confinement and fed grain, which is high in energy but relatively low in essential vitamins. The peculiar irony is that, to offset nutritionally poor diets, food animals are often fed dietary supplements –along with antibiotics to help them resist disease and hormones to boost production levels.

*There is a better way to make nutritious food. A new generation of farmers is producing nutrient-dense, great-tasting food by raising animals on pasture using Management Intensive Grazing (MIG). MIG is a sustainable farming method in which beef and dairy cattle, sheep, hogs and poultry are rotated through paddocks of high quality grasses and legumes in cycles of harvest, then rest and re-growth. MIG works with natural processes to maximize soil health, the basis of the food system. Diverse pasture plants draw minerals from the soil and capture energy from the sun to create a complex of vitamins, carotenoids, fatty acids and other essential components. Animals graze the nutritious leafy parts of forage plants that, in turn, become the meat, eggs and milk that nourish us and our families. Animal manure returns organic matter back to the soil, which provides nutrients for the plants. **The complex nutritional goodness we humans need is manufactured not in a lab or a factory but in the living plants that turn sunlight into food.***

Vitamins and Antioxidants

Vitamins are divided into two groups: water-soluble (B-complex and C) and fat-soluble (A, D, E and K). Unlike water-soluble vitamins that need regular replacement in the body, fat-soluble vitamins are stored in the liver and fatty tissues and are eliminated much more slowly than water-soluble vitamins. Fat-soluble vitamins are essential for maintaining good health. Deficiencies can lead to a wide range of acute maladies and can increase risks of disease. Foods that contain these vitamins will not lose them when cooked and are much safer than supplements (which can contain potentially toxic mega-doses).

Antioxidants are present in foods as vitamins, carotenoids, minerals, polyphenols and other components. Oxidation, or the loss of an electron, can sometimes produce reactive substances known as “free radicals” that can cause stress or damage to the cells. Antioxidants can stabilize these free radicals before they cause harm. Because oxidation is a naturally occurring process within the body, a balance with antioxidants must exist to maintain health.

¹ Government Accountability Office “Dietary Supplements: FDA Should Take Further Actions to Improve Oversight and Consumer Understanding” January 2009. Available at www.gao.gov/new.items/d09250.pdf

² Zambati, P. 2008. “Global Market Growth for Dietary Supplements.” See www.naturalproductsinsider.com

Vitamins and antioxidants that have been shown to occur in larger amounts in grass-fed products than in grain-fed products include:

- **Vitamin A** is an antioxidant that protects cells from destruction. It is important for vision, for healthy skin and mucus membranes and for development of strong bones and teeth.
- **Beta-carotene** (pro-vitamin A), also a potent antioxidant, provides a source of vitamin A, enhances immune system, helps reproductive system function properly and may protect against cancer.
- **Lutien** is an antioxidant related to beta-carotene. It reduces the risk of macular degeneration (a leading cause of blindness), improves skin health and may help prevent breast and colon cancer.³
- **Vitamin D** plays a critical role in the body's use of calcium and phosphorous. It increases calcium absorption and helps form and maintain bones and teeth.
- **Vitamin E** acts as an antioxidant, protecting vitamins A and C, red blood cells and essential fatty acids from destruction. Vitamin E deficiencies have been linked with diabetes, auto-immune disorders, AIDS, muscle damage during exercise Parkinson's disease, eye disease and lung and liver diseases.⁴
- **Selenium** is a mineral that acts as an antioxidant by protecting cells from damage by free-radicals.

Grass-Fed Has the Good Stuff *In an MIG pasture, animals eat nutrient-dense foods that are appropriate for their digestive systems and have high bioavailability. As a result, they produce food that is more nutrient dense. Ruminants were built to digest the green leafy parts of fresh grasses and legumes, where so many vitamins and antioxidants are created, rather than just seeds or grains. Non-ruminants, like chickens and pigs, benefit from fresh greens, seeds, worms, insects and other rich food sources while grazing. Beta-carotene (bright orange in color, masked by green chlorophyll) is produced by plants and stored in the fat of pastured animals. Their fat is yellow, not white. Exposure to sunlight increases production of naturally occurring vitamin D. When pastured animals are fed grain, their reserves of beta-carotene are depleted, as much as 97% after only 48 days in a feedlot.⁵ Grass-fed beef is 4 times higher in vitamin E than grain-fed beef.⁶ An Ohio State University study found that pigs raised on pasture have 300% more vitamin E and 74% more selenium.⁷ Meat from sheep raised on pasture contains twice as much lutein as meat from grain-fed sheep.⁸*

Milk, cheese and butter from grass-fed cows have been found to be higher in Vitamin A, D, E and beta-carotene than dairy products from than grain-fed cows. The natural golden color of grass-fed butter, yogurt and cheese is an indication of its superior nutritional value.⁹ Don't be fooled by industry, which is now adding marigold to mimic grass-fed.

According to a 2007 study, pastured eggs contain 2/3 more vitamin A, 7 times more beta-carotene and 3 times more vitamin E than conventionally produced eggs.¹⁰ Egg yolks are also the richest known source of lutein (another carotenoid)—the firmer and deeper yellow-orange color of yolks, the more of these important nutrients.¹¹ In confinement operations, poultry diets are supplemented with vitamin E, but grass-fed eggs still contain 30 times more vitamin E. In addition, because pastured hens are exposed to sunlight, their eggs are also 3 to 6 times higher in vitamin D.¹²

Ultimately, supplements cannot make up for a poor diet—in humans or animals. Good food is the best way to health. Grazing is the gateway to food that can be good medicine.

³ From the Lutein Information Bureau. www.luteininfo.com Accessed 9/11/09.

⁴ Ford, Earl S. and Sowell, Anne. 1999. "Serum Alpha-Tocopherol Status in the United States Population: Findings from the Third National Health and Nutrition Examination Survey." *American Journal of Epidemiology* 150: 290-300

⁵ "Short-term Grain Feeding and its Effect on Carcass and Meat Quality." Proceedings of the New Zealand Grasslands Association 1997. 57:275-277.

⁶ Smith, G.C. "Dietary Supplementation of Vitamin E to cattle to Improve Shelf Life and Case Life of Beef for Domestic and International Markets." Colorado State University, Fort Collins, Colorado 80523-1171.

⁷ Mutetikka, D.B., and D.C. Mahan, 1993. "Effect of Pasture, Confinement, and Diet Fortification with Vitamin E and Selenium on Reproducing Gilts and their Progeny" *Journal of Animal Science* 71:3211.

⁸ Kruggel, W.G. 1982. "Influence of Sex and Diet on Lutein in Lamb Fat." *Journal of Animal Science* 54: 970-975.

⁹ Searles, SK et al. 1970. "Vitamin E, Vitamin A, and Carotene Contents of Alberta Butter." *Journal of Dairy Science* 53(2) 150-154.

¹⁰ See *Mother Earth News* (Oct/Nov) 2007 or (www.motherearthnews.com/eggs.aspx)

¹¹ Slattery, M. at al. 2000. "Carotenoids and Colon Cancer." *American Journal of Clinical Nutrition* 71: 575-82.

¹² Lopez-Bote et al. 1998. "Effect of Free-Range Feeding on Omega-3 Fatty Acids and Alpha-Tocopherol Content and Oxidative Stability of Eggs." *Animal Feed Science and Technology* 72:33-40.