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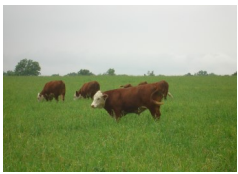
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Our November 2024 Newsletter for Healthy Living

Going Grass Fed

Purchasing meat typically involves an initial check of its price, but not everyone is this inquisitive when it comes to its nutritional content and freshness. Fortunately, the option of grass fed beef is continuously gaining momentum as more people begin to experience the benefits this type of beef offers to human health and the environment. Grass fed beef comes from cows that are allowed to graze on pasture and consume their natural diet of grass.

This situation is different from cows raised in concentrated animal feeding operations (CAFOs), which are fed a processed diet containing primarily corn, soy and growth-promoting drugs. Corn fattens cattle faster, allowing them to be



ready for the market in about 15 months. It also led to the creation of these feed lots, as cows no longer had to be moved

from pasture to pasture. The cheap corn feed led to declines in beef prices, which in turn increased beef consumption among Americans.

In exchange for cheap meat and dairy, we're paying a hefty price, one that may be infinite in the damage it's causing via pollution and damage to human health. Further, when cows eat corn and grain, not only does the quality of their milk degrade but they live in a state of chronic inflammation, which increases their risk of infection and disease. Grain is not a cow's natural diet, and as such creates an acidic environment in the animal's digestive tract, which encourages E. coli formation. At least 73% of large CAFOs also use low

doses of antibiotics in their cattle feed, which promotes the development of antibiotic-resistant bacteria.

Organic grass fed beef production requires more effort and attention to detail, as ranchers have to follow strict guidelines that will ensure the freshness and quality of the meat. Because grass fed cows are grown in conditions that are more humane, the meat's quality is superior to conventional beef. The meat

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also tends to be loaded with more nutrients, without the risks attributed to harmful pathogens that are found in conventional beef. Positive long-term effects of grass fed beef production on the environment must be emphasized, too.

As they move quickly from one pasture to another, the cattle invigorate the plant root systems and fertilize pastures with manure, simulating the grazing patterns of ancient herds that maintain natural balance in grasslands. By mimicking the natural behavior of migratory herds of wild grazing animals — meaning allowing livestock to graze freely, and moving the herd around in specific patterns — farmers can support nature's efforts to regenerate and thrive. This kind of land management system promotes the reduction of atmospheric carbon dioxide (CO2) by sequestering it back into the soil where it can do a lot of good. Once in the earth, the CO2 can be safely stored for hundreds of years and adds to the soil's fertility.

A study published in the Proceedings of the National Academy of Sciences of the United States of America

sought to discover the benefits of organic versus conventional farming under four key sustainability metrics: productivity, environmental impact, economic viability and social well-being. Researchers analyzed data that emerged in the past 40 years, and the results highlighted these positive effects connected to organic farms: more profitable and can earn farmers anywhere from 22% to 35% more compared to their conven-

tional counterparts; more environmentally friendly; able to produce equally or more nutritious foods with fewer or no pesticide residues; can provide unique benefits to the ecosystem; can deliver social benefits by promoting social interactions.

Regular beef already contains certain nutrients that are beneficial to you. However, grass fed beef goes above and beyond in terms of nutrition, possessing these important components: lower fat levels; higher levels of beta-carotene; higher amounts of minerals like calcium, magnesium and potassium, alongside other minerals like iron, zinc, selenium and phosphorus; higher portions of total omega-3 fatty acids; higher amounts of conjugated linoleic acid (CLA or cis-9 trans-11), a potential cancer fighter; higher amounts of vaccenic acid that can be transformed into CLA, and a healthier ratio of omega-6 to omega-3 fatty acids.

The benefits of grass fed beef do not end with its high nutritional content. If you're still not convinced why beef from grass fed cows is better, take note of these key points:

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- It's Turkey Time
- Niacin Is Necessary
- November Specials & Coupon

Niacin Is Necessary

Niacin is also called vitamin B3. It's a water-soluble vitamin that's found naturally in some foods. It can also be purchased as a supplement. Recent studies have shown that niacin plays a role in an active metabolism and may help prevent severe COVID-19.

Niacin is a precursor to nicotinamide adenine dinucleotide (NAD⁺), which is used to catalyze more than 400

determine if it reduces the severity of the disease. A third study is investigating niacin and COVID in the elderly. Since the start of 2020, three papers have been published evaluating the potential effectiveness of niacin against COVID-19.

In a paper published in *Maturitas*, scientists postulated that the effect B vitamins have on the immune system and immune competence may make it a

important role in controlling pro-inflammatory cytokines, and niacin is a building block of NAD.

As the researchers explain: *"NA [niacin] is in fact the only compound to readily produce NAADP if needed in acidic environments (as is characteristic to ensuing inflammatory disease pathology), which in turn provides a potential energy/H⁺ pump-out action of its inverse, downstream kinetic (heat) energy inflammation to ultimately restore NAD⁺ to normal levels, as well as other inflammatorily-depleted cofactors and biochemical pathways towards a more thermodynamically homeostatic health status."*

According to the National Institutes of Health Office of Dietary Supplements, the recommended daily allowance for niacin is 16 mg for men and 14 mg for women who are not pregnant or lactating. One serving of beef liver contains 14.9 mg, which meets a woman's requirement. Otherwise, to meet the daily requirement, a person would need to eat two servings of chicken, or two servings of salmon, or 3 servings of ground beef or 3 cups of brown rice. One medium potato contains just 2.3 mg, and one slice of whole wheat bread contains just 1.4 mg. These may be sufficient amounts to avoid pellagra, which is a severe niacin deficiency that can cause neurological symptoms. However, it is easy to see how dietary intake may lead to chronic insufficiency.

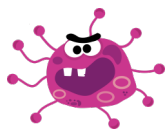
The downstream effect of niacin is appropriate calcium signaling, which is responsible for inhibiting SARS-CoV-2 from infecting a cell and for driving it out of an already infected cell. The process is regulated by nicotinic acid adenine dinucleotide phosphate (NAADP), which is generated from NADP. Niacin is a precursor to NAD, which can be altered to NADP. So, without enough niacin, your body cannot make enough NAADP that affects calcium signaling and may therefore increase the risk of severe COVID-19.

Reference: National Institutes of Health, Niacin. Linus Pauling, Niacin, Function. *RxList*, June 11, 2021. *MedicinePlus*, Nicotinamide. *Clinical Trials*, March 26, 2021. *Clinical Trials*, February 12, 2021. *Clinical Trials*, June 2, 2020. *Maturitas* 2021; 144:108. *OSF Preprints*, Sufficient Niacin Supply: The Missing Puzzle Piece to Covid-19 and Beyond? National Institutes of Health, Niacin, Niacin Deficiency. *Biochemistry Society Transactions*, 2019; 47(1).

"Vitamin B assists in proper activation of both the innate and adaptive immune responses."

enzymatic reactions in the body. NAD⁺ is necessary for genome stability and the control of genetic expression. Once NAD⁺ has been formed, it can be altered to form other necessary compounds such as nicotinamide adenine dinucleotide phosphate (NADP) and nicotinamide adenine dinucleotide (NADH). The vitamin also helps convert carbohydrates into glucose and is part of the process in making several steroid hormones.

It's rare to develop an outright deficiency unless you suffer from an underlying medical condition that reduces



your absorption in the gastrointestinal tract. Although it's available as a supplement, when taken in

large doses there are several side effects that can be uncomfortable. One of those side effects is commonly known as a niacin flush. Symptoms of the niacin flush include burning, itching or tingling sensation. The reaction goes away as the body builds up a tolerance. While it is irritating, and sometimes alarming if you don't expect the effect, a niacin flush is nonetheless harmless.

The anti-inflammatory effects of niacin and the effects it has on cytokine have led to several papers postulating the role that niacin may play against COVID-19. Additionally, there are two more studies in clinical trials with anticipated completion dates of December 2021 and June 2022. One study is evaluating the potential use of nicotinamide riboside in patients who have COVID-19 to protect kidney function and the second is using a form of vitamin B3 to

useful adjunct as a treatment strategy and possible prevention. They wrote: *"Vitamin B assists in proper activation of both the innate and adaptive immune responses, reduces pro-inflammatory cytokine levels, improves respiratory function, maintains endothelial integrity, prevents hypercoagulability and can reduce the length of stay in hospital. Therefore, vitamin B status should be assessed in COVID-19 patients and vitamin B could be used as a non-pharmaceutical adjunct to current treatments."* The paper goes on to detail how each of the B vitamins may help manage some of the symptoms from COVID-19, including how niacin is a building block of NAD and NADP, which are vital to combating inflammation.

One lab study published in late 2020 analyzed niacin as a potential treatment for patients with colorectal cancer who may have an increased susceptibility to COVID-19. They demonstrated that niacin had molecular functions that could help treat patients with colorectal cancer who had COVID-19, but the results were not validated in humans, so the researchers recommended further investigation to confirm potential use.

Recent research published in an Open Science Framework preprint focuses specifically on niacin and has raised the question about whether it may be a crucial player in the disease process. A marked elevation of proinflammatory cytokines has been blamed for a chain of events that lead to multiple organ failure and death. Potentially controlling these cytokines could reduce the downstream damage. NAD⁺ plays an

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The Power of Peppers

Bell peppers are some of the most versatile vegetables available, no matter where you go in the world. They make delicious sautes, additions to salads, soups, and casseroles, and are a nutritious raw snack. Compared to other peppers, bell peppers aren't known for a

system, decrease inflammation, reduce risk for heart disease and scavenge harmful free radicals in the body. Other health benefits of bell peppers come from nutrients like thiamin (vitamin B1), niacin (vitamin B3), folate, magnesium and potassium.

noids, while delivering free radical-scavenging activity. Green peppers showed the highest phenolic activity, but had less carotenoids than red and yellow varieties, and less ascorbic acid compared to red peppers. Red peppers were found to have the most ascorbic acid content, as well as a higher level of free radical-scavenging activity.

A study in *Prostate Cancer and Prostatic Diseases* journal highlighted the possible link between vitamin C-rich food intake, particularly green peppers, and a lowered risk of prostate cancer. Researchers conducted initial studies plus 12.7 years of follow up on men exposed to high amounts of asbestos in Australia. Men who consumed more bell peppers and broccoli in their diet had a lower risk for prostate cancer. The authors highlighted that the nutrients lycopene, beta-carotene, vitamins E, C and A, and retinoids in bell peppers may have played a role in promoting this effect.

Reference: *PLOS ONE*, 11(8): e0161464. *British Nutrition Journal* 2002 Nov; 88(2):3405-12. *The American Journal of Clinical Nutrition*, June 2015; 101(6):1135-43. *Nutrition* 2002; 18(10):872-79. USDA Food Data Central; *Peppers, sweet, red, raw*. *Journal of Food Composition and Analysis*; 18(2005):751-58. *The American Journal of Clinical Nutrition*, May 2005; 81(5):12325-95. *Clinical Cases in Mineral and Bone Metabolism*, May-Aug 2017; 14(2):200-206. *Food, Agriculture and Environment* 2003; 1(2):22-27. *Prostate Cancer and Prostatic Diseases* 2008; Vol. 11, p. 61-66.

“Men who consumed more bell peppers and broccoli in their diet had a lower risk for prostate cancer.”

high level of spiciness. Red bell peppers tend to be sweeter, as are some yellow and orange varieties. The heat intensity of peppers is measured in Scoville heat units (SHU). Green, yellow or red bell peppers score a zero on the scale, jalapeño peppers have around 3,500 to 8,000 and habañeros reach 150,000 to 300,000 units. There are also other peppers you can include in your dishes for both flavor and color, such as banana, shishito, cayenne and serrano.

Bell peppers have a fair share of health-boosting vitamins and minerals. Regular consumption of vitamin C-rich foods, like bell peppers (which may contain more than twice the vitamin C of an orange) may help boost the immune

A study published in the *Journal of Food Composition and Analysis* showed that vitamin K, which is abundant in bell peppers, may help synthesize some proteins that may positively affect blood coagulation. Vitamin K may also play a role in protecting your bones against osteoporosis. People with reduced bone density have lower levels of this nutrient. Interestingly enough, sautéed peppers contain higher amounts of vitamin K than raw peppers. Authors of a study published in the *Food, Agriculture and Environment* journal conducted a thorough examination of green, red and yellow bell peppers to discover the nutrients found in these vegetables. All peppers examined contained phenolic compounds, ascorbic acid and carote-



Going Grass Fed *continued from page one*

Humane growing methods — Grass fed cows consume their natural diet of grass, since they have been allowed to graze on grasslands during their lifetime. A grass-rich diet consequently boosts the cow's health and the quality of meat. Meanwhile, cows in profit-hungry CAFOs are fattened for slaughter by being fed artificial diets that contained grains, corn, soy, growth-promoting drugs and antibiotics. Eventually, this diet alters the bacterial balance and composition in the animal's gut, resulting in meat that's tainted with potentially health-damaging bacteria. **Greater fatty acid composition** — As mentioned earlier, grass fed beef contains higher ratios of healthy fats like vaccenic acid, conjugated linoleic acid and omega-3 fatty acids, compared to grain fed cows. *“Although the exact physiologic mechanisms behind these benefits are not completely understood, grassfed beef (and dairy) can provide a steady dietary source of CLAs. The optimal ratio of dietary omega-6 to omega-3 fatty acids is believed to be between 1-to-1 and 4-to-1. Seven studies that compared the overall fat content of different beef types found that grassfed beef had an average ratio of 1.53, while grain-fed beef had a*

less healthy average ratio of 7.6. Grass-fed meat also contains higher levels of antioxidants, including vitamins E and A, as well as superoxide dismutase and catalase, enzymes that scavenge free radicals that cause oxidation and spoilage. Higher antioxidants are better for meat quality (retarding spoilage from lipid peroxidation) and beneficial to the consumer.” **Lower risk of bacterial infections** — Overcrowding of cows in CAFOs is a very common situation that may lead to increased bacterial contamination. Samples of CAFO-grown beef revealed traces of antibiotic-resistant bacteria that may have contributed to the increasing number of antibiotic-resistant disease cases being reported. Consumer Reports examined 300 samples of conventionally raised and sustainably produced (including grass fed) ground beef to see if there were traces of five types of disease-causing bacteria: *Clostridium perfringens*, *Salmonella*, *Enterococcus*, *Staphylococcus aureus* and *E.coli* (including O157 and six other toxin-producing strains). The beef also underwent secondary testing to check if the bacteria in meat were resistant to antibiotics used in human medicine. The results showed that all of the ground beef

samples contained bacteria linked to fecal contamination (*enterococcus* and/or nontoxin-producing *E. coli*). These can lead to blood or urinary tract infections in humans. Nearly 20% of the samples contained *Clostridium perfringens*, which is responsible for nearly a million food poisoning cases in the U.S. annually. 10% of the samples had a toxin-producing strain of *Staphylococcus aureus*, which unfortunately, cannot be destroyed even with thorough cooking. 1% of the samples contained salmonella that causes an estimated 1.2 million illnesses and 450 deaths in the U.S. per year. Three conventional beef samples showed traces of methicillin-resistant *Staphylococcus aureus* (MRSA), a bacteria strain linked to nearly 20,000 deaths per year, according to 2017 data. Meanwhile, none of the sustainably raised beef samples contained this bacteria strain. But fear not—we offer fresh grass fed cuts from Lamb Farm and Graham's Organics, small certified organic Michigan farms.

Reference: *Impact of Antibiotic Use in CAFOs on Human Health*. *PNAS* 2015; 112(24):7611-16. *Meat Science*, January 2014; 96(1):535-40. *The Journal of Veterinary Medical Science*, February 2016; 78(2):351-54. *Meat Science and Nutrition*, 2018. *Nutrients*, February 2019; 11(2):370. *Back to Grass: The Market Potential for U.S. Grass-fed Beef*, October 2017. *Nutrition Journal* 2010; 9(10). *Journal of Animal Science and Biotechnology*, 2016; 7:68. *Consumer Reports*, December 21, 2015. USDA Food Data Central, *Beef, grass-fed*.