

Bovine Colostrum: The Anti-Aging Revolution: What Athletes Can Teach Us About Staying Young Part 2

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Aging is generally accepted as a normal and inevitable part of the human experience, and as discussed previously, bovine colostrum is the only medicinal food that can offer Fountain of Youth benefits without the financial and health costs of synthetic growth hormone. Practitioners in the field of anti-aging medicine need to understand the benefits that bovine colostrum can offer their patients in terms of avoiding the physical and mental ravages of modern diseases and enhancing quality of life. Early research with colostrum supplementation in highly trained (“super”) athletes gave us a significant clue as to how these findings are applicable to aging well. It’s important to note that with more effective colostrum processing, resulting in better preservation of naturally occurring growth hormones and more effective liposomal delivery methods, health benefits could be achieved at lower doses than 20 years ago (20 grams/day vs. 60 grams/day).

Improved Recovery After Exercise

Early research with elite Australian athletes showed that supplementing with bovine colostrum was advantageous. After four weeks of supplementation (60 grams/day), athletes had up to a 20% increase in strength, stamina, and endurance, and

recovery time after intense exercise was reduced by nearly half. These benefits, in turn, allowed them to train harder and improve performance.¹ Oxidative stress due to intense exercise contributes to muscle fatigue, but glutathione (and its precursors, cysteine, glycine, and glutamic acid) can increase an athlete’s exercise capacity before fatigue sets in by neutralizing free radicals that otherwise cause inflammation and damage muscle tissue. Glutathione and its antecedents are abundant in colostrum.² Physical activity is important at all ages, and so colostrum can help adults be more productive in their exercise regimes and more likely to stay motivated with less pain and more gain. Added benefits of glutathione include regulation of other less effective antioxidants, antiviral and antibacterial activity, immune system enhancement, enhanced functioning of lymphocytes, and carcinogen neutralization.

Tissue Repair and Accelerated Healing

The super athlete experiences injury at a high rate, and although skeletal muscle does repair itself through regeneration, injured muscle does not fully recover its strength.³ The natural growth hormones in colostrum are significant to healing.

IGF-1, highly expressed during the early inflammatory phase of an injury, appears to aid in fibroblast proliferation and migration and subsequently increases collagen production.⁴ Platelet-derived growth factor (PDGF) in colostrum helps stimulate IGF-1 production as well as other growth hormones. Growth hormone has been shown to accelerate bone regeneration.⁵ Additionally, transforming growth factor in colostrum stimulates the production and repair of DNA and RNA. Heavy exercise damages muscle fibers, tendons, and ligaments, but TGF along with fibroblast growth factor (FGF) and epithelial growth factor (EGF) repairs them. FGF is a powerful stimulator of angiogenesis and a regulator of cellular migration and proliferation. Accelerated repair means that athletes recover more quickly from injuries and can resume training. Less downtime keeps athletes competitive and less likely to miss competitive events. Likewise, adults who heal more quickly from skeletal muscle injuries can resume normal activity faster and minimize any ill health effects caused by inactivity or immobility.

Colostrum also promotes bone formation and suppresses bone resorption, which counteracts the normal loss in bone density associated

with aging. Osteopontin, lactoferrin, EGF, and IGF-2 are the dominant proteins in bovine colostrum affecting bone density in a dose-dependent manner.^{6,7} Aging changes the balance of osteoblasts and osteoclasts such that more bone is degraded than built up, leading to increased bone porosity, loss of bone strength, and acceleration of osteoporosis. TGF- β (found in nature only in colostrum) is naturally produced by osteoblasts, and TGF- β dramatically increases apoptosis among the osteoclasts.

Improved Immune System Function

Following intense exercise, the immune system temporarily shuts down so that the body can recover from the physical stress. The normal production of T-cells and natural killer (NK) cells is suppressed. During training, athletes are consistently in an immune-compromised state which opens them up to opportunistic bacteria and viruses, particularly those that cause upper respiratory infections. Colostrum transmits immunity for common pathogens via antibodies, thereby effectively terminating the immune system shutdown. Bovine colostrum contains natural antibodies against *Enterococcus*, *E. coli*, *Campylobacter*, *Salmonella*, *Staphylococcus aureus*, and *Klebsiella pneumoniae*, among hundreds of others. Athletes self-report a lower incidence of upper respiratory infections while taking bovine colostrum.^{8,9} The natural antibodies in colostrum can provide a significant benefit in aging, particularly in anyone with a compromised immune system.

A second method of combating infectious pathogens is by the proline-rich polypeptides (PRPs) in colostrum. PRPs are powerful immune system modulators that act by either stimulating an underactive immune system or suppressing an overactive immune system. They do this by helping regulate the thymus gland and stimulate the production of either helper or suppressor T lymphocytes.¹⁰ PRP-2s primarily

function as antimicrobials and, along with lactoferrin and lactoperoxidase, destroy viruses and bacteria on contact.¹¹ Lactoferrin can also increase the production of NK cells. The PRP-3s primarily have an anti-inflammatory effect and help quell the immune system when it overreacts to an otherwise harmless substance, as in the case of allergies.¹² PRPs are not species specific, which makes bovine colostrum an excellent and abundant source. PRPs are vital to returning the immune system to a state of balance, particularly when it has been overtaxed by strenuous exercise or an autoimmune condition.

Prevention of Leaky Gut

Colostrum can also benefit the tendency for “leaky gut” that occurs with heavy exercise, thereby preventing heat stroke.¹³ Gut disorders are common in long-distance runners. The physiological response to increased gut permeability is to expel gut contents, usually by diarrhea, which may diminish performance. Research showed that highly trained runners could experience a 250% increase in gut leakage accompanied by a 2° body temperature increase. With daily colostrum supplementation for 2 weeks, that initial amount of gut leakage decreased by 80%, despite the same temperature increase.

To some extent, most people have some degree of leaky gut syndrome (LGS), which makes the intestinal lining more permeable to macromolecules, pathogens, and toxins. Frequently used antibiotics and long-term use of nonsteroidal anti-inflammatory drugs (NSAIDs) and prescription analgesics are three primary causes of LGS. Not only is LGS a consequence of high intensity training, but perhaps as much as 85% of the general population has this syndrome by virtue of lifestyle, antibiotic-contaminated foods, GMOs, pesticides, and environmental pollution. The damage from LGS may not be obvious at first and may take many years to develop, yet the major health consequences outside

of GI pathogens are allergies and autoimmune conditions. Bovine colostrum has been shown to reduce NSAID-induced intestinal permeability.¹⁴ The EGF in colostrum repairs the gut ulcerations, thereby preventing the crossover of pathogens and toxins into the bloodstream and increasing the efficiency of nutrient uptake. In athletes, colostrum allows more of the carbohydrates and amino acids from food to be utilized as fuel during exercise. Similarly, as one ages, the body can more effectively obtain nutrients from the food eaten, and the tendency for malabsorption and malnutrition are greatly reduced with consistent colostrum use.

Colostrum Dosing and Safety

Because the benefits observed in athletic performance are the desired benefits in anti-aging, the recommended dosing is the same. Two to four tablespoons, or 10 to 20 grams, twice daily is ideal. Colostrum should be taken on an empty stomach, 30 minutes prior to a meal or 2 hours after a meal. At least one dose should be taken before bedtime, because the growth hormones work optimally during sleep.

There are no known contraindications for colostrum supplementation in athletes or the general public. Colostrum supplementation is generally regarded as a noninvasive intervention, and therefore, safe. As a basic precaution, pregnant or lactating women should check with their physicians before taking colostrum.

Efficacy and Quality Colostrum

Bovine colostrum for human consumption is essentially worthless if the active components have been destroyed during processing. Not only must it contain high levels of the active components, the active components must be able to reach the target cells with no compromise in bioactivity. Therefore, the quality and in turn the effectiveness of any colostrum supplement depends on four factors – the colostrum source, the processing methods, testing and

Bovine Colostrum

verification of active components, and a liposomal delivery (LD) system.¹⁵ Colostrum should be sourced from pasture-fed dairy cows that are certified to be healthy and BST, BSE, and antibiotic free, and gently processed using flash pasteurization and low-heat drying. A phospholipid coating, such as liposomal delivery, protects the colostrum from digestion and ensures that it can deliver the nutrients, growth hormones, and antipathogenic action of colostrum to the cells. Raw fresh colostrum has a liposomal surrounding of the active, sensitive molecules, and so we know that this is critical for processed supplements. Trainers and physicians who recommend colostrum supplements to athletes and patients wanting to age well must recommend a high-quality, efficacious product if they expect to see results.

An added benefit of liposomal delivery and improvements in colostrum processing over the last two decades is that a smaller quantity of powdered colostrum can now produce the same results. The early research with Australian athletes entailed supplementing with 60 grams, whereas today only 10 to 20 grams is required.¹⁶ Not only is it more economical but certainly easier to consume.

Douglas Wyatt is the founder of Sovereign Laboratories LLC, a Sedona-based company dedicated to developing natural products that provide the public with the best solutions for optimal health. He is honored to be listed as the leading expert in colostrum and is credited with reintroducing bovine colostrum into human use. Additionally, he serves as the research director of the International Center of Nutritional Research, a not-for-profit institute dedicated to nutritional health, and is one of the leading figures in the natural products industry. Doug is a leader in the research and a proponent of colostrum's unique and powerful healing components that show incredible promise for turning the tide on the prevention and treatment of the world's increasing chronic disease endemic. As a publisher, author, writer, scientist, and public speaker, Doug has appeared nationwide on television and radio shows and at health conventions worldwide. He is dedicated to the prevention of chronic disease through natural nutritional intervention and is working with the WHO (World Health Organization) and other internationally recognized research organizations on clinical trials on HIV/AIDS and other infectious diseases, autoimmune disease, and bowel health issues.

Conclusion

We know that athletes will go to great lengths to achieve superior performance, as evidenced by seemingly pervasive doping and illegal growth hormone use in professional sports. Even nonathletes turn to synthetic growth hormone injections in the hopes of staying young and vibrant. We also know that the financial and health cost of HGH isn't worth it, especially when there's an all-natural and safe alternative. Bovine colostrum can help build lean muscle mass; burn adipose tissue; maintain ideal blood glucose levels; improve recovery after exercise; accelerate healing of injuries; preserve and boost immune function; and heal leaky gut syndrome. Colostrum's ability to enhance health, maintain an optimally functioning body, and help heal chronic conditions gives it the power to halt the deleterious and dreaded effects that we associate with human aging. And, unlike isolated hormones, colostrum works naturally to help replace the body's own growth hormones and stimulates the endocrine system to continue producing these anti-aging hormones. From professional athletes to those of us just trying to age well, the search for the Fountain of Youth may have finally come to a jubilant end.

Notes

1. Buckley JD et al. Bovine colostrum supplementation during endurance running training improves recovery, but not performance. *J Sci Med Sport*. 2002 Jun;5(2):65-79.
2. Borissenko M. Glutathione: a powerful antioxidant found in colostrum. *New Zealand Milk Products*. August 2002.
3. Sato K et al. Improvement of muscle healing through enhancement of muscle regeneration and prevention of fibrosis. *Muscle Nerve*. 2003 Sep;28(3):365-372.
4. Molloy T et al. The roles of growth factors in tendon and ligament healing. *Sports Med*. 2003;33(5):381-394.
5. Schmidmaier G et al. Improvement of fracture healing by systemic administration of growth hormone and local application of insulin-like growth factor-1 and transforming growth factor-beta1. *Bone*. 2002;31(1):165-172.
6. Du M et al. Protective effects of bovine colostrum acid proteins on bone loss of ovariectomized rats and the ingredients identification. *Mol Nutr Food Res*. 2011 55(2):220-228.
7. Hou JM et al. Bovine lactoferrin improves bone mass and microstructure in ovariectomized rats via OPG/RANKL/RANK pathway. *Acta Pharmacol Sin*. 2012 33(10):1277-1284.
8. Brinkworth GD, Buckley JD. Concentrated bovine colostrum supplementation reduces the incidence of self-reported symptoms of upper respiratory tract infection in adult males. *Eur J Nutr*. 2004;42(4):228-232.
9. Crooks C et al. Effect of bovine colostrum supplementation on respiratory tract mucosal defenses in swimmers. *Int J Sport Nutr Exerc Metab*. 2010 Jun;20(3):224-235.
10. Shau H, Kim A, Golub SH. Modulation of natural killer cell and lymphokine-activated killer cell cytotoxicity by lactoferrin. *J Leukoc Biol*. 1992;51(4):343-349.
11. See DM et al. An in vitro screening study of 196 natural products for toxicity and efficacy. *J Am Nutraceutical Assoc*. 1999;2(1):25-39.
12. Keech A. Unpublished research. 2007.
13. Marchbank T et al. The nutraceutical bovine colostrum truncates the increase in gut permeability caused by heavy exercise in athletes. *Am J Physiol Gastrointest Liver Physiol*. 2011;300(3):G477-G484.
14. Playford RJ et al. Co-administration of the health food supplement, bovine colostrum, reduces the acute non-steroidal anti-inflammatory drug-induced increase in intestinal permeability. *Clin Sci (Lond)*. 2001 Jun;100(6):627-633.
15. Chrai SS et al. Liposomes (a review) part two: drug delivery systems. *BioPharm*. 2002 Jan:40-43.
16. Antonio J et al. The effects of bovine colostrum supplementation on body composition and exercise performance in active men and women. *Nutrition*. 2001;17:243-247. ◆