

# **Bovine Colostrum: The Anti-Aging Revolution: What Athletes Can Teach Us About Staying Young Part 1**

**by Douglas A. Wyatt  
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Aging is generally accepted as a normal and inevitable part of the human experience. And, the quest for longevity is almost equally normal and inevitable. We are more determined than ever to avoid the physical and mental ravages of modern diseases and to enhance quality of life. The end of humans' long search for the Fountain of Youth may be well within reach, not to mention sitting right in front of us all along. My argument has always been that athletic performance and staying young are essentially the same concept, and that anyone can employ similar strategies to maintain their youthfulness as do athletes trying to improve their performance. A more complete understanding of the connection between aging and athletic performance will demonstrate the beneficial role of bovine colostrum supplementation in both.

Professional athletes have always sought ways to enhance their performance, achieve better results, and gain an advantage over their competitors. The Olympian, or "superathlete," takes this to new heights, and in a world where performance is measured in milliseconds, any natural substance that enhances endurance and strength and reduces recovery time determines who wins the gold and who wins the silver. Many of today's superathletes

are turning to bovine colostrum as a means to that coveted edge. The growth hormones in bovine colostrum help burn fat, build lean muscle, build strength, shorten recovery time, balance blood glucose levels, and prevent illness after vigorous exercise. Colostrum's ability to maintain lean body mass, facilitate fat loss, repair tissue, and accelerate healing is just as significant for an athlete as for an aging person. The hallmark signs of aging include decreased muscle and bone mass and a loss of skin elasticity, which are manifested as loss of muscle tone, sagging skin, and wrinkles, as well as a plethora of autoimmune conditions. Is it possible that the poorly aged adult is simply an untrained, underperforming athlete?

## **Decline in Growth Hormone Production**

The outward signs of aging are the result of the body's beginning to taper off its production of growth hormone following maturity, at around age 20 with a 15% decline every decade. By late adulthood, growth hormone levels are generally less than half the levels during early adulthood. Although this is normal, both athletes and aging adults have been lured by the promise of youth, vitality, and increased muscle mass from synthetic human growth hormone

(HGH). Contrary to popular belief that HGH injections will increase muscle mass, growth hormone does not possess anti-aging properties in and of itself. Instead, growth hormone stimulates insulinlike growth factor (IGF-1 and IGF-2) production in the liver, which is responsible for cellular reproduction in all tissues. Furthermore, manufactured HGH by nature of its recombinant DNA origins is only 70% bioidentical to natural growth hormone. As a result, HGH injections may lead to cancer, joint pain, carpal tunnel syndrome, arm and leg swelling, glucose intolerance, increased risk of diabetes, and gynecomastia. Conversely, growth hormones in bovine colostrum are nearly bioidentical to growth hormones in the human body, many of which actually help prevent cancer, improve glucose tolerance, and reduce inflammation and pain. Colostrum is the only food source of all the growth hormones required by the human body.

Unlike injectable HGH and synthetic IGF-1, colostrum is not a banned substance. The International Olympic Committee (IOC) launched an inquiry into whether powdered bovine colostrum was a potentially banned substance following a higher than anticipated number of medals won by the Australian Olympic

team in the 2000 and 2004 games.<sup>1</sup> The Australians claimed that their winning advantage was attributable to their athletes' colostrum supplementation during training.<sup>2,3</sup> The IOC determined that colostrum was instead a superfood, and their ruling provided athletes with a safe, viable, and legal alternative to doping and other banned substances. The only downside to colostrum supplementation was that athletes needed 60 grams/daily, a rather large dose, to achieve results.

Growth hormones in bovine colostrum, such as IGF-1, IGF-2, and transforming growth factor (TGF-alpha and TGF-beta) have regenerative effects that extend to nearly all structural cells of the body. Bovine colostrum promotes healing and exerts the anti-aging effect by increasing IGF-1 to prepuberty levels, thereby increasing muscle mass and strength. IGF-1 also stimulates the growth and repair of DNA and RNA.<sup>4,5</sup>

Because the body produces fewer growth hormones and fewer antioxidants with age, reactive oxygen species can damage DNA, proteins, and lipids, thereby accelerating aging. Insufficient antioxidant production is believed to be a contributing factor in cancer, cardiovascular disease, cataracts, brain dysfunction, and immune system decline.<sup>6</sup> It's also been hypothesized that telomeres are the key to aging and cancer by the role that they play in maintaining the structural integrity of DNA. Chronic oxidative stress compromises telomere integrity.<sup>7</sup> As DNA strands become shorter with aging, they eventually become too badly damaged to replicate new cells, and senescence is associated with aging, cancer, and shorter lifespan due to an overall increased risk of death.<sup>8-10</sup> Geneticists have found that people over age 60 who have shorter telomeres were 3 times more likely to die from heart disease and 8 times more likely to die from an infectious disease than people with longer telomeres.<sup>11</sup> Bovine colostrum contains telomerase, an enzyme that helps preserve telomeres, thereby

allowing identical, undamaged cells to replicate over and over.

### **Increasing Lean Body Mass/Burning Adipose Tissue**

Increasing lean body mass and burning adipose tissue is critical for the high-caliber athlete, and it also plays an important anti-aging role in preventing those extra pounds from accumulating as metabolism slows and inactivity becomes more common. Once again, growth hormone and IGF-1 enter the equation, and increasing these naturally (and legally) can only be achieved in one or two ways: first, by performing weight-bearing exercise 1 to 2 hours daily, every day of the week, which does cause the body to increase IGF-1 production, but not significantly; second, by supplementing a sensible exercise program with bovine colostrum, which is certainly more realistic. Studies with Colostrum-LD showed that a dose of just 20 grams/day was necessary for the growth hormones to exert their fat-burning action.<sup>12</sup> Due to significant developments in colostrum processing, results could be achieved at one-third the dose used in earlier studies. Additionally, the desired results occur after 4 to 8 weeks of supplementation, and maintenance of health benefits requires consistent daily use.

The IGF-1 in colostrum is the *real growth hormone* that promotes muscle growth and favors adipose stores over glucose as a fuel source.<sup>13</sup> IGF-1 is primarily produced by the liver and production is stimulated by growth hormone. IGF-1 is the only natural hormone capable of promoting muscle growth by itself. Although synthetic IGF-1 is banned by the IOC, naturally occurring IGF-1 in bovine colostrum supplements is not, and IGF-1 is abundant in bovine colostrum. During vigorous exercise, colostrum slows protein breakdown and stimulates glucose transport in muscle. Muscles are then able to make more efficient use of the fuel available to them, which results in an increase in lean

muscle mass without a corresponding increase in adipose tissue. Long-term colostrum supplementation increases IGF-1 levels.<sup>14</sup> Daily colostrum supplementation benefits skeletal muscle tissue by reducing the oxidant-induced damage during exercise.<sup>15</sup>

Colostrum supports maintaining a healthful body weight, whether it be keeping the weight on or keeping it off. Approximately one-third of adults over 60 suffer from sarcopenia, a major cause of falls and subsequent disability.<sup>16</sup> Colostrum contains nine essential amino acids and nine nonessential amino acids that spare and synthesize muscle tissue. Leucine, of which colostrum contains significant quantities, promotes muscle synthesis by activating a signaling pathway that stimulates the body's anabolic drive.<sup>17,18</sup> As aging muscle becomes resistant to leucine stimulation, colostrum supplementation can help overcome the deficit, prevent further muscle



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► degradation, and promote new muscle tissue. Colostrum also benefits individuals with muscle wasting syndrome due to cancer, rheumatoid arthritis, AIDS, or other malignant disease by boosting muscle mass.

Conversely, colostrum supplementation can be a potential therapeutic treatment/prevention strategy for obesity. Bioactive peptides and amino acids enhance hormone release which leads to increased satiety and thus decreased food intake. Colostrum contains leptin, and elevated leptin levels accelerate the satiety signals from the stomach to the brain, thereby curtailing overeating and excess calorie consumption. It is, however, important to note that many people initially experience minor weight gain when they first begin supplementation, which is due to the increase in lean muscle mass.

### Blood Glucose Homeostasis

Keeping blood glucose levels consistent throughout the day avoids catabolism, in which muscle protein is broken down into amino acids for fuel. When a person's glucose level begins to drop within two hours of the last meal, those amino acids are converted to glucose in order to raise the blood glucose back into homeostasis to ensure that the brain has a consistent fuel supply. The body is very efficient in this process, but rather self-defeating

if the goal is to preserve or increase muscle tissue. During the fasting state between meals, the body is essentially consuming its muscle tissue to fuel the brain. Anabolism is the buildup of muscle protein from amino acids. Having some protein in the body's gas tank keeps the brain fueled and maintains muscle tissue. IGF-1 plays a critical role by preventing catabolism and promoting anabolism.

The blood glucose homeostasis benefit may be more easily recognizable to athletes in training, yet it can have a significant impact on aging well, particularly in terms of improving glucose tolerance, boosting insulin sensitivity and even reducing the risk of type 2 diabetes.<sup>19</sup> Diabetes is a major aging disease characterized by significant cellular damage caused by the generation of reactive oxygen species. In most cases, a high-fat diet, excessive weight gain, and obesity lead to an increased risk of type 2 diabetes and non-alcoholic fatty liver disease. Research shows that bovine colostrum can decrease levels of blood glucose and ketones, as well as reduce cholesterol and triglycerides, all of which may cause complications in type 2 diabetic patients.<sup>20</sup>

Bovine colostrum is the only medicinal food that can offer Fountain of Youth benefits without the financial and health costs of synthetic growth hormone. This is not to say that colostrum is a "magical anti-aging pill," but it is a significant game-changer in the arena of anti-aging medicine by virtue of its naturally occurring growth hormones. Regular

physical activity and healthful lifestyle behaviors must not be overlooked. Colostrum supplementation is most effective when muscle fibers are subjected to repeated injury during exercise, such that lean body mass is maintained or increased. Trained muscles are more efficient at utilizing glucose and bigger muscles utilize more stored fat for energy. It's a win-win for people who want to age well and maintain a more youthful appearance.

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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 other infectious disease, autoimmune disease, and bowel health issues.

# **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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup> 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.<sup>4</sup> 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.<sup>5</sup> 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.<sup>6,7</sup> 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- $\beta$  (found in nature only in colostrum) is naturally produced by osteoblasts, and TGF- $\beta$  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.<sup>8,9</sup> 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.<sup>10</sup> PRP-2s primarily

function as antimicrobials and, along with lactoferrin and lactoperoxidase, destroy viruses and bacteria on contact.<sup>11</sup> 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.<sup>12</sup> 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.<sup>13</sup> 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.<sup>14</sup> 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

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verification of active components, and a liposomal delivery (LD) system.<sup>15</sup> 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.<sup>16</sup> Not only is it more economical but certainly easier to consume.

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### 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.

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