



Anti-Aging Benefits of Bovine Colostrum

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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. Bovine colostrum is re-emerging as a pre-eminent anti-aging supplement for its overall health benefits and reported use in specific medical conditions.

Bovine colostrum contains hundreds of thousands of components, only which a few hundred have been identified and studied, that enhance the human body's functioning by two primary mechanisms. First, the numerous immune factors and natural antibiotics in colostrum provide strong support for optimal immune system performance. Second, colostrum's growth factors offer a broad-spectrum boost for optimal health and tissue healing.

The intent of this article is to identify the major anti-aging benefits of bovine colostrum and to describe how its components achieve that result. As more health professionals and their patients become educated about colostrum's benefit to human health and well-being, increased awareness will lead to widespread acceptance and use of this dietary supplement.

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. This is the result of the body beginning to taper off its production of growth hormone following maturity (around age 20). Although this is normal, it doesn't necessarily have to be. The immune and growth factors in bovine colostrum, Insulin-like Growth Factor (IGF-1 and IGF-2) and Transforming Growth Factor (TGF-alpha and TGF-beta) have regenerative effects which extend to nearly all structural cells of the body. Bovine colostrum promotes healing and exerts the anti-aging effect by increasing IGF-1 to pre-puberty levels, thereby increasing muscle mass and strength. IGF-1 also stimulates the growth and repair of DNA and RNA.

Contrary to popular belief that Human Growth

Hormone (HGH) injections will increase muscle mass, growth hormone does not possess anti-aging properties in and of itself. Instead, growth hormone stimulates IGF-1 and IGF-2 production in the liver which is responsible for cellular reproduction in all tissues. Additionally, manufactured HGH by nature of its recombinant DNA origins is only seventy percent bio-identical to natural HGH. As a result, HGH injections may lead to cancer. Conversely, every growth factor in bovine colostrum is bio-identical to growth factors in the human body, many of which actually prevent cancer.

It's been hypothesized that telomeres are the key to

aging and cancer by the role they play in maintaining the structural integrity of chromosomes (DNA). Telomere length determines the number of times that a cell can divide, so as DNA strands become shorter with aging, they eventually become too badly damaged to replicate new cells. This inactivity, or senescence, is associated with aging, cancer, and shorter lifespan due to an overall increased risk of death. Geneticists have found that people over age sixty who have shorter telomeres were three times more likely to die from heart disease and eight times more likely to die from an infectious disease than people with longer telomeres.

Shortened telomeres have also been identified in patients with cancers of the pancreas, bone, prostate, bladder, lung, kidney, head, and neck. Bovine colostrum contains telomerase, an enzyme which adds telomeres (sequences of DNA) to the ends of DNA strands in chromosomes. Telomerase prevents DNA strands from shortening, allowing identical, undamaged cells to replicate over and over.

Preservation of Lean Body Mass, Bone Density and Healthy Weight

Components of colostrum have been shown to play a role in boosting satiety, modulating glucose homeostasis, and optimizing lean body mass, all of which are potential therapeutic treatments/prevention strategies for obesity. Bioactive peptides and amino acids enhance

Regular use of bovine colostrum brings about a wide spectrum of anti-aging benefits, including:

- Bone growth & density
- Muscle growth & support
- Anti-cancer defense
- Increased insulin sensitivity
- Anti-obesity defense
- Anti-inflammatory protection
- Cholesterol reduction
- Anti-hypertensive effect
- Anti-microbial activity
- Anti-viral activity
- Gastrointestinal tissue defense
- Improved cognitive function
- Delayed onset of Alzheimer's symptoms

hormone release which leads to increased satiety and thus, decreased food intake. Branched chain amino acids are essential for maintaining lean muscle mass, particularly in older adults. Diets high in leucine (high in colostrum and very metabolically active) generated more total weight loss, more fat loss, and less muscle mass loss. Colostrum also contains leptin, a hormone produced in adipose and other tissues which inhibits food intake and stimulates energy expenditure. Elevated leptin levels accelerate the satiety signals from the stomach to the brain, thereby by curtailing over-eating and excess calorie consumption.

Approximately one-third of adults over sixty suffer from sarcopenia which is a major cause of falls and subsequent disability. Colostrum contains nine essential amino acids and nine non-essential amino acids which spare and synthesize muscle tissue. Leucine promotes muscle synthesis by activating a signaling pathway which stimulates the body's anabolic drive. As aging muscle becomes resistant to leucine stimulation, colostrum supplementation can help overcome the deficit, prevent further muscle degradation, and promote new muscle tissue.

Wasting syndrome, such as cachexia, is common in patients with cancer, AIDS, rheumatoid arthritis, and other malignant diseases and is not alleviated by increased calorie consumption. Components of colostrum attenuate catabolic wasting by boosting muscle mass. Supplementation in HIV-positive patients increases glutathione, and studies show that most patients were able to reach an ideal body weight. Additionally, colostrum is helpful in managing HIV-associated chronic diarrhea, thereby enhancing nutritional status.

Aging changes the balance of osteoblasts and osteoclasts such that more bone is degraded than built up, leading to increased bone porosity and loss of bone strength. The decline in estrogen levels in postmenopausal women leads to an increase in osteoclasts and an acceleration of osteoporosis. TGF-B (found in nature only in colostrum) is naturally produced by osteoblasts, and TGF-B dramatically increases apoptosis among the osteoclasts. Additionally, osteopontin, lactoferrin, Epidermal/Epithelial Growth Factor (EGF), and IGF-2 are the dominant proteins in bovine colostrum and affect bone density in a dose-dependent manner.

Defense Against Age-Related Neurocognitive Decline and Alzheimer's Disease

Components of bovine colostrum have been shown to play a role in mitigating age-related depression, cognitive decline and dementia, especially Alzheimer's Disease. Serotonin levels often decline with age, and tryptophan levels affect the brain's ability to synthesize serotonin. Increasing dietary intake of tryptophan relieves depression and stress in people highly vulnerable to stress. Alpha-lactalbumin increases the plasma ratio of tryptophan which in turn, increases brain serotonin activity, reduces cortisol concentration, improves coping ability, and improves mood under stress.

Chronic stress, hypothesized as a contributing factor for low brain serotonin levels, has been associated with poor memory performance. Studies show that alpha-lactalbumin significantly improved memory test performance in stress-compromised individuals. Colostrum's protective effect against various age-related diseases, including neurocognitive disorders, is also due to the ability of alpha-lactalbumin to boost glutathione levels.

Proline-rich Polypeptides (PRPs), also termed clostrinin, in colostrum enhance the defense against oxidative stress, prevent beta-amyloid aggregation, and decrease expression of inflammatory chemokines and cytokines, thereby attenuating inflammatory processes

that precede Alzheimer's diseases. PRPs are likely the most promising treatment identified to date. Research has shown that PRPs improve the mental functioning of Alzheimer's patients with mild to moderate dementia. This suggests a role for bovine colostrum in the early stages of cognitive decline; the prospect of delaying the onset and even reversing the disease process is good news for patients and their families. By 2025, the number of Americans age 65 and older with Alzheimer's disease is estimated to increase by 40 percent, and without any efficacious treatment or any new pharmaceutical breakthroughs, the numbers will continue to rise as the population ages.

Improved Glucose Tolerance, Insulin Sensitivity & Type 2 Diabetes Prevention

Components of bovine colostrum have been shown to

PRP/CLOSTRININ

Proline-rich Polypeptide complex, or Clostrinin, is a richly varied immune and inflammatory modulator, which helps ailments characterized by an overactive immune system, such as autoimmune diseases, asthma and allergies. PRPs in bovine colostrum have the ability to regulate the activity of the immune system as do the hormones of the thymus gland.

- Decreases production of free radicals
- Improves or eliminates allergies
- Reduces pain, swelling, and inflammation in auto-immune diseases
- Stimulates an underactive immune system
- Modulates an overactive immune system
- Increases permeability of skin vessels
- Improves long-term memory
- Slows or reverses symptoms of Alzheimer's Disease
- Increases lifespan in mice

play a role in improving glucose tolerance, boosting insulin sensitivity and even reducing the risk of Type 2 diabetes. Diabetes is a major aging disease characterized by significant cellular damage caused by generation of reactive oxygen species. In most cases, a high-fat diet, excessive weight gain, and obesity lead to an increase risk of Type 2 diabetes and non-alcoholic fatty liver disease. Research shows that risk reduction can be achieved in mice by supplementation alone, which appears to increase metabolism. Even with no additional intervention, both glucose tolerance and insulin sensitivity were improved; body weight was lower and lean body mass was higher.

Human studies found that supplementation significantly decreases blood sugar levels without increasing insulin secretion even with very high levels of insulin resistance; and 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.

Individuals with Type 2 diabetes appear to have a higher risk of eventually developing Alzheimer's disease. Recent research identified amylin deposits in the brain that may indicate risk for developing dementia and Type 2 diabetes. Amylin is expressed and secreted with insulin. It influences blood sugar levels, such that if too much is secreted, the risk for developing diabetes increases. These recent findings show that amylin deposits can also build up and form plaques in the brain, similar to amyloid plaques found in Alzheimer's disease. Both amylin and amyloid are over-produced during the disease process, cross the blood brain barrier where they build up in brain tissue, and over time, lead to the loss of brain cells. Bovine colostrum supplementation as an adjunct to controlling blood glucose levels may be utilized as a preventive therapy even in the absence of diagnosed Alzheimer's disease.

Inhibition of Cancer Cell Development

Cancer cells are continuously created and destroyed in the human body, and cancer only truly manifests when a weakened immune system allows the cancerous cells to multiply out of control, spread and destroy other healthy tissues. The current treatment of choice for many cancers, chemotherapy, compromises the body's natural immune function, thereby creating a situation of increased risk for opportunistic infections. The diverse combination of immune and growth factors in colostrum can protect against invading pathogens and toxins as well as inhibit the spread of cancer cells. Colostral lactalbumin can cause the selective death of cancer cells, leaving the surrounding non-cancerous tissues unaffected. Lactoferrin has strong tumor inhibitory activity via apoptosis, blocking angiogenesis, modulating carcinogen-

metabolizing enzymes, and iron scavenging.

Chemotherapy may be more effective when bovine colostrum is taken regularly due to the EGF in colostrum which makes human cancers more sensitive to chemotherapy agents. If viruses are involved in either the initiation or the spread of cancer, bovine colostrum could prove to be one of the best ways to prevent cancer.

Another anti-cancer benefit is attributed to the high content of cystine/cysteine and gamma-glutamylcysteine dipeptides which are used to synthesize glutathione. Glutathione is well-known for its capacity to destroy reactive oxygen species, and it also detoxifies carcinogens; thus, modulating and bolstering the functionality of the immune system. Research shows that tumor prevention is accompanied by increased glutathione levels, spleen lymphocyte proliferation, phagocytosis, and activity of natural killer, T-helper, and cytotoxic T-cells.

Modulation of Cardiovascular Disease Origins and Cardioprotection

Research suggests that atherosclerosis and cardiovascular disease are linked to altered immunity, such that when cardiac and vascular tissue are damaged, the immune system does further damage by creating antibodies. Several studies have focused on Chlamydia pneumonia as a trigger in the activation and development of the initial stages of atherosclerotic lesions; immune factors in bovine colostrum help fight this bacteria. Proline-rich Polypeptides (PRPs) help modulate the immune response, thereby limiting the cholesterol deposition on injured blood vessels. Growth factors promote repair and regeneration of cardiac cells as well as regenerating new coronary blood vessels for collateral circulation.

Although casein protein in colostrum raises cholesterol, whey protein lowers cholesterol. The sphingolipids decreased total blood cholesterol levels by approximately thirty-percent in rats, and researchers speculate that cholesterol synthesis in the liver is inhibited. A significant decrease in LDL cholesterol has been noted, which might be modulated by a decrease in very low-density lipoprotein fractions.

Ischemic stroke resulting from a major cerebral artery occlusion is a leading cause of death and severe disability. Current treatment (reperfusion of the ischemic region) may paradoxically exacerbate brain damage via reperfusion injury. Secondary injury can result from reactive oxygen species formation and inflammatory cytokine release. The anti-cytokine and anti-inflammatory factors in bovine colostrum may thus, have a neuroprotective effect.

Colostrum also has an antihypertensive effect from the ACE inhibitory peptides (casokinins and lactokinins) it contains. Alpha-lactalbumin and betalactoglobulin

possess opioid-like activity, and endogenous opioid peptides have shown promise as blood-pressure regulators. Some research suggests that lactoferrin helps modulate platelet binding.

Optimization Of Immune System Function

Colostrum optimizes the human immune system. Bovine colostrum contains hundreds of thousands of antibodies, so many that we should consider the cow a “walking pharmaceutical factory”. These antibodies develop within twenty-four hours of a cow coming in contact with a pathogen (i.e., pathogens in the soil, air, feed, or from human contact), and are subsequently passed into colostrum and milk. Super pasteurization destroys all of these antibodies, so milk products do not contain any living components. Colostrum maintains 40 times more antibodies than raw milk. The immune-enhancing constituents in bovine colostrum quickly and effectively modulate a full range of immune functions, including destruction of pathogens and elimination of toxins. Colostrum has been shown to contain specific antibodies to more than nineteen specific disease-causing pathogens including; E. coli, salmonella, candida, streptococcus, staphylococcus, H. pylori, cryptosporidium, and rotavirus.

The Proline-rich Polypeptides (PRPs) in colostrum help regulate the thymus gland; PRPs can both stimulate a weakened immune system and/or balance an overactive immune system, as is the case of many allergies and autoimmune diseases.

Lactoferrin has a unique ability to up or down regulate iron as needed by various tissues, which is critical to its vast and varied modulatory effects. Lactoferrin has antiviral, antibacterial, and anti-inflammatory properties and has been utilized for the treatment

of cancer, HIV, herpes, chronic fatigue, candida albicans and other infections. Lactoperoxidase also provides

broad spectrum antimicrobial defense when it combines with thiocyanate and hydrogen peroxide.

A key factor of the immune system is the chemicals that are involved in cell-to-cell communication, antiviral and anti-tumor activity and regulation and intensity of immune responses. Cytokines help increase T-cell activity and stimulate production of immunoglobulins.

Colostrum supplementation results in higher levels of white blood cells, lymphocytes, and cytokines, all of which lead to greater immune responsiveness and reduced infection severity.

Bovine alpha-lactalbumin stimulates the production of glutathione, considered to be the keystone of immune protection against oxidative stress. Characterized by glutathione deficiency and oxidative stress, HIV infection has shown to benefit from colostrum supplementation which significantly increases glutathione levels.

Protection of Gastrointestinal Tissue and Optimization of Intestinal Flora

Components of bovine colostrum have been shown to play a role in improving intestinal permeability, or leaky gut syndrome, and irritable bowel syndrome which are caused by exposure to infectious agents, such as bacteria, viruses, yeast, parasites, and toxins. Immunoglobulins, lactoferrin, and other immune factors can kill, inhibit, and prevent the reproduction of pathogens and protect against toxins. Colostrum is capable of preventing diarrhea caused by enterotoxic Escherichia coli, among nineteen other common bacterial strains, in humans. The lactoferrin in colostrum competes with pathogens for binding sites on the intestinal wall or binds directly to pathogens to inactivate them.

Colostrum’s epithelial growth factors stimulate repair of intestinal membranes at the cellular level, and alpha-lactalbumin boosts glutathione levels. The anti-inflammatory effect

LACTOFERRIN

Lactoferrin has a unique ability to up or down regulate iron as needed by various tissues. This is critical to the vast and varied modulatory effects of lactoferrin which contribute to the health benefits of bovine colostrum.

- Kills dangerous microbes
- Nurtures beneficial bacteria
- Binds iron to prevent free radicals
- Optimizes blood-iron levels
- Inhibits cancer cells
- Enhances intestinal absorptive cells and maturation of dendritic cells
- Boosts immunity
- Enhances gene transcription
- Reduces inflammation
- Combats obesity

CHRONIC INFLAMMATION AS A DISEASE MODEL

Several human diseases have etiological origins in inflammatory processes. These include, but are not limited to cancer, atherosclerosis, ischemic heart disease, rheumatoid arthritis, diabetes and other autoimmune disorders. Chronic inflammation leads to a progressive shift in the type of cells present at the site of inflammation and is characterized by simultaneous destruction and healing of the tissue from the inflammatory process. Because bovine colostrum helps to quell inflammation, it may be useful in the management of chronic diseases.

reduces cellular spacing, thereby reducing hyper-permeability. Low antioxidant levels including glutathione are associated with the inflammatory bowel diseases, ulcerative colitis and Crohn's disease.

Dietary components acting as prebiotics can improve the balance and proliferation of beneficial intestinal flora by providing substrates. When lactose is converted to galactooligosaccharides, a substrate that specifically enhances growth of bifidobacteria is created. Bifidobacteria and other strains protect the small intestines by secreting antimicrobial substances, modulating the immune response, and influencing metabolic activities.

Bovine alpha-lactalbumin provided dose-dependent protection against alcohol or stress-induced gastric injury in rats. By preventing or healing gastric mucosal injury, ulcers, and other gastrointestinal pathologies, colostrum could potentially eliminate the need for anti-ulcer drugs, and the health risks associated with their use.

Arthritis Relief / Prevention

Arthritis, characterized by inflammation in the joints and the resulting pain, is a mild autoimmune disease. The immune system continues to attack antigens, long after this immune response is no longer necessary. The Proline-rich Polypeptides (PRPs) in bovine colostrum halt the out-of-proportion inflammatory response by inhibiting over-production of T-cells and lymphocytes, which are stimulated by antigens and mitogens. Colostrum is a rich source of Methyl Sulfonyl Methane (MSM) and along with growth factors to stimulate tissue regeneration, cartilage and connective tissue rebuilding is possible.

Liposomal Delivery & Standardization

To achieve the anti-aging benefits of bovine colostrum, it is crucial that the active components will bypass digestion in the stomach and be bioavailable for uptake and distribution to the body's cells. Additionally, colostrum must be soluble for free dispersion throughout the GI tract as well as be able to readily disperse in water, formula, and sports nutrition drinks. Liposomal Delivery makes colostrum up to 1,500% more bioavailable. The proprietary Liposomal Enhanced Delivery (LD) system has extensive research showing that ingested bovine colostrum with liposomal delivery achieves the intended results.

Processed colostrum should be GMP, Kosher, and Halal certified. Superior colostrum should be standardized to contain a minimum of 25% immunoglobulins, 1.5% lactoferrin, 1.5% IGF-1 and 4-5% PRPs in every batch.

Summary

Emerging evidence suggests that bovine colostrum contains a plethora of components that play various roles in human health and offer anti-aging benefits. As we understand more about colostrum, we recognize its far-reaching potential in increasing longevity. Colostrum's ability to enhance health and healing from chronic diseases gives it the power to halt the deleterious effects associated with human aging. Daily supplementation with biologically active bovine colostrum offers hope to a wide range of patients who are otherwise in physical and/or psychological distress.

It is important that diagnosis and evaluation of chronic symptoms be determined by qualified health care professionals either natural health care practitioner or complimentary care physician. The above is not intended to diagnose or treat disease and the statements herein have not been evaluated by the Food and Drug Administration.

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This is a partial list of all 56 references for this article available at www.CenterforNutritionalResearch.org

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Mr. Wyatt is also a leader in the research and 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 epidemic. As a publisher, author, writer, scientist and public speaker, Mr. Wyatt has appeared nationwide on television and radio interview shows and at health conventions worldwide. He is dedicated to the prevention of chronic disease through natural nutritional intervention and is working with the World Health Organization and other internationally recognized research organizations on clinical trials on HIV/AIDS other infectious diseases, auto immune diseases, and bowel health issues.