Dynamic Chiropractic

NUTRITION / DETOXIFICATION

Bovine Colostrum: The Colossal Zoonutrient!

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"Many hormones, growth factors and bioactive substances present in the maternal organism are present in colostrums ... often exceeding concentrations that occur in maternal plasma."

~ Endocrinology Review (1993)

In my recent previous articles for *DC*, I have written on a few of the many health benefits of whey protein. As some of you may recall, I focused particularly on weight loss, briefly explaining how whey's amino acid profile and glycomacropeptides (GMPs) may have a salubrious effect on appetite. (See "The Whey to Weight Loss," Part I [Oct. 7, 2004] and Part II [Jan. 1, 2005]). My last article, "The Superfood Solution," argued the benefits of including functional foods high in phytonutrients and zoonutrients both in the diet and, as a matter of practicality, as a preferred first step in dietary supplementation.

Although whey protein concentrates - and to a lesser extent, whey protein isolates - can be rich in zoonutrients when properly processed, the true superstar of zoonutrients is colostrum. Regular readers of my articles may recall that zoonutrients are similar to phytonutrients, except that their source is from the animal kingdom, not the plant kingdom. Like most phytonutrients, zoonutrients are "quasi-nutrients," not yet considered essential for life, but becoming increasingly recognized as pivotal to optimal wellness.

Defining Bovine Colostrum

Robert Preston, MD, president of the International Institute of Nutritional Research, defines colostrum in the following manner: "When a (mammal) ... gives birth to its offspring, its mammary glands filter out of the blood the immune factors it has acquired through a lifetime of fighting disease-causing organisms. It then concentrates these factors into special non-milk immune supporting fluid called colostrum. A mother animal produces true colostrum for only the first twenty-four hours after giving birth." Indeed, besides being very rich in highly bioavailable vitamins and minerals, the colostrum of mammals has two main functions: to supply immune factors for the otherwise highly susceptible newborn and provide growth factors, not only to the immune system via the thymus, but for cells throughout the body.

Colostrum's Immune Factors

Immunoglobulins: These are protein molecules that can be efficacious, both prophylactically and therapeutically, against allergens, bacteria (including *H. pylori*), viruses, parasites, fungi, and yeast. The immunoglobulins present in colostrum are predominantly IgA, with trace amounts of IgD, IgE, IgG, and IgM. Human colostrum typically contains 2 percent IgG content, while whole bovine colostrum can have from 8 percent to 15 percent IgG. Processing concentration techniques can yield as high as 40 percent colostrum, though such would no longer be a "whole" colostrum product, thereby diminishing other factors. Immunoglobulin concentrations should be verified by high-performance liquid chromatography (HPLC). Independent testing unfortunately shows that many formulations do not achieve label claims.

PRPs (Proline-Rich Polypeptides): These are small, very low-weight molecules (6.000 Daltons) that have an immune-modulating effect upon the thymus. They have been described as biological response modulators (BMRs). Immunodeficiency (T1 deficit states), as in HIV EBV and herpes, may be thus counteracted, while immune hyperactivity (T2 hyperactivity), as in autoimmune and allergic diathesis conditions, may be inhibited. PRPs, isolated from colostrum and taken sublingually, have shown great promise as an immune-equilibrating nutraceutical.

Lactoferrin: As an iron-binding protein, lactoferrin's competition for available iron in the gut both inhibits bacterial and viral populations and oxidation, and the resulting "downstream" inflammation from excess iron radicals.

Glycoproteins: These sugar-amino complexes act as protease and trypsin inhibitors, thus protecting the immune and growth factors in colostrum, which are otherwise vulnerable to degradation via enzymatic action.

Lactalbumin: These protein molecules are rich in double-bonded cystine, which promotes the production of glutathione, the major intracellular endogenous antioxidant and detoxicant. Lactalbumin may also help raise serotonin in deficiency states and lower cortisol when in excess.

Cytokines: Cytokines are integral to intercellular communications that regulate immune activity and related downstream inflammatory responses. These immune messengers include the interleukins, the lymphokines, and interferon. The PRPs mentioned previously have a modulating effect on the cytokines.

Lysozymes: Lysozymes contain enzymes that can attach to and digest bacteria cell walls, thus destroying them.

Colostrum's Growth Factors

Growth factors from mammalian bovine colostrum are by and large not species specific. Indeed, they are almost identical to human colostrum! The various growth factors in whole colostrum are by definition anabolic, stimulating both generation and regeneration of epithelial, mesenchymal, and endothelial cells. During periods of low calorie intake, growth factors favor the use of fat for fuel and are therefore protein and "lean body mass" sparing.

Insulin-Like Growth Factor I and II: Often abbreviated as IGF-I and IGF-II, these are the predominant growth factors in colostrum. They help regulate lipid, protein and carbohydrate anabolism. Of note, IGF-I is one of a handful of molecules that promotes the growth and repair of DNA and RNA.

Epithelial Growth Factor: EGF enhances dermal anabolism. Indeed, topical applications of EGF concentrates may soon be a common cosmeceuticals ingredient. Colostrum already is.

Transforming Growth Factors A and B: TGF A and B promote mesenchymal cellular proliferation. TGF thus has potential for assisting bone and cartilage repair, deep wound healing, and restoring intestinal integrity in "leaky gut" syndromes.

Platelet-Derived Growth Factor: PDGF promotes growth not only in connective tissue such as fibroblasts and smooth muscle, but has some promise in sparing and regenerating nerve tissue as well.

Quality Concerns

As with most nutraceuticals, quality, and therefore clinical efficacy, varies greatly. Some things to look for when choosing a colostrum product include:

HPLC Analysis: Make sure there is high-performance liquid chromatography (HPLC) analysis on every batch to verify label claims for IgG percent.

Low Heat Processing: The high heat pasteurization, flash pasteurization without immediate cooling to 40 degrees F, and direct drying processes all denature colostrum's peptides.

First and Second Milkings: The first and second milkings, taken within the first 24 hours of calving, are the richest in IgG and protein peptides. The best products use only these early milkings.

Antibiotic/Hormone "Free": The most desirable colostrum is from cows not routinely treated with prophylactic antibiotics or given synthetic growth hormones.

Solubility: Your patients will prefer a colostrum powder that dissolves quickly without clumping.

As always, prefer manufacturers that follow "good manufacturing practices" (GMPs). This should include a microbiological analysis on each product batch.

Freshness: When possible, prefer colostrum from cows whose climate conditions allow year-round production. Know that most colostrum is produced only once a year, because calving typically occurs in the spring.

Lactose-Digesting Enzymes: Lactase may be added to minimize lactose intolerance in susceptible individuals.

Dosage

The literature suggests about 2 grams per day for purposes of daily prophylaxis. Therapeutic endeavors may approach 12 grams a day, spread out evenly over three or four dosings for several weeks if necessary. Higher doses may need to take lactose intolerance into consideration. Late-evening dosing may be too "energizing" for some. Colostrum should not be taken with protein-digesting enzymes. It is best taken on an empty stomach or with whey protein concentrate rich in glycoproteins.

Conclusion

I was going to start this article with the following quote, but feared it would be taken as incredulous and that some would dismiss the article before reading further. Now that you have had the briefest of introductions to some of the better-understood zoonutrients in colostrum, I thought it permissible to close with it, and with one other, more familiar quote.

"Colostrum has been used to successfully treat: Thrombocytopenia, Anemia, Neutropenia, Myasthenia Gravis, Guillain Barre Syndrome, Multiple Sclerosis, Systemic Lupus, Rheumatoid Arthritis, Bulluos Pamphigoid, Kawasaki's Syndrome, Chronic Fatigue Syndrome and Crohn's disease, among others."
~ Dr. Dwyer
(*New England Journal of Medicine*)
"An ounce of prevention is worth a pound of cure."
~ Benjamin Franklin,
Poor Richard's Almanac

Resources

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