

## Why Colostrum Is Nature's Super Food

Just as certain fruits and vegetables are naturally rich in special health promoting chemicals called *phyto-nutrients*, certain animal sourced foods are rich in special health promoting chemicals called *zoo-nutrients* (pronounced zoo'-o-nutrients). The richest of all zoonutrients is the first food of all mammals, called *colostrum*.

This “first meal” is rich in cell signaling messengers that both support the immune system and rapid growth, while supplying a super-rich source of nutrition.

BioPharma only uses colostrum from cows that are pasture fed and are antibiotic, growth hormone, steroid and pesticide free. We do not prevent the newborn calf from getting its colostrum.

Our colostrum is rich in immune peptides, growth factors, vitamins, minerals, and healthy fats and sugars. The concentration of the most *bioactive* peptides, the proline rich polypeptides (**PRPs**), in *whole* colostrum powder is usually between 1-3% of the total powder weight. BioPharma's concentration over 5%! Furthermore, most manufacturers of colostrum powders remove much of the PRP fraction, along with lactose, minerals and water, using *ultra-filtration* technology, to elevate the immune globulin and protein content of the powder. This then reduced the immune balancing effectiveness of the colostrum powder.

### **Colostrum's Immune Peptides**

- Immunoglobulins ( A, D, E, G and M) help neutralize toxins, viruses and bacteria.
- Lactoferrin is an iron binding protein with antiviral, anti-bacterial, anti-fungal and anti-inflammatory effects.
- Proline-rich polypeptides (PRPs) are extremely small immune signaling peptides that regulates the thymus gland, which is the producer of T-Cells. PRP's stimulate weak immune systems and help re-balance over-active immune systems. Stated more technically, PRP's are cytokine precursors that help modulate cytokine levels, and thus help balance immune responses.
- Lymphokines are hormone-like peptides that help regulate the immune response.
- Cytokines help regulate the immune response, boost the activity of T-cells, and control cell-to-cell communication. {These cytokines include: Interleukin type-1, Interleukin type-4, Interleukin type-6, Interleukin type-10, Interleukin type-13, Interleukin type-14, Beta-interferon (IFN-beta), Interferon-alpha (TFN-alpha), Interferon-gamma.}
- Glycoproteins are protease and trypsin enzyme inhibitors that keep the immune and growth factors in colostrum from destruction in the acid stomach. They can also help protect gastric erosions from excess stomach acid.
- Other Immune Factors are orotic acid, secretory IgA, IgA specific helper, B lacto globulin, lactalbumin, albumin, prealbumin, alpha 1-antitrypsin, alpha 1-fetoprotein, alpha 2-macroglobulin, hamopexin, haptoglobin, beta 2 microglobulin, alpha 2-AP glycoprotein, C3, C4 and orosomucoids.

### **Colostrum's Vitamins**

- Vitamin B6
- Vitamin B12
- Vitamin E
- Vitamin A (from carotene)
- Vitamin C
- Thiamin (Vitamin B1)
- Folic Acid (B9)
- Pantothenic Acid (B5)
- Riboflavin (Vitamin B2)
- Beta-carotene
- Retinoic Acid

### **Colostrum's Minerals**

- Calcium
- Chromium
- Iron
- Magnesium
- Phosphorus
- Potassium
- Sodium
- Zinc

### **Colostrum's Growth Factors**

Growth factors help signal *growth, repair and regeneration* of tissue. For example, colostrum is known in the cosmetic industry as a natural source of Epithelial Growth Factor, which is thought to enhance the regeneration of skin and maintenance of skin elasticity. Similarly, colostrum is believed to enhance the regeneration of stomach and gut cells, and reduce the intestinal permeability to bacteria and viruses associated with *leaky gut syndrome*.

Other regenerating growth factors include:

- Growth hormone (GH)
- Insulin type growth factor (IGF-1)
- Insulin type growth factor (IGF-2)
- Transforming growth factor (TGF-alpha)
- Transforming growth factor (TGF-beta)
- Epidermal-GF
- Fibroblast-GF
- Platelet-derived-GF

## Colostrum's Fats

- Milk Fat Globule Membrane contains compounds such as *sphingomyelin*, *cephalin* and other *phospholipids* that assist in development of the mucosal barrier, liver function, brain function, and immune function.
- Milk Fat provides *essential fatty acids* for cell development and act as an energy source. Colostrum milk fat, richer in *unsaturated fatty acids*, is similar to that of spring-time milk.

## Colostrum's Sugars

- Lacto-oligosaccharides promote growth of good bacteria in the intestine.
- Sialyloligosaccharides and sialylglycoconjugates have an immune function in the intestine, are involved in brain and nerve development, and in cell to cell recognition.
- Oligo Polysaccharides and Glycoconjugates are sugars that attract and bind to bacteria and parasites, preventing them from attaching to or entering the intestinal membranes. (streptococcus, E. coli, salmonella, Cryptosporidium, giardia, entamoeba, Shigella, Clostridium difficile toxins A & B and cholera)

## Colostrum's Other Components

- Lactoperoxidase-thiocyanate is an anti-microbial enzyme.
- Transferrin binds and transports iron, inhibiting bacterial intestinal pathogens
- Lysozyme is an enzyme capable of destroying bacteria and viruses on contact.
- Xanthine Oxidase oxidizes bacteria through its ability to release hydrogen peroxide.
- Lactalbumin raises brain serotonin levels, which can positively effect improves mood and counter stress hormones.

## Conclusion

Clearly, colostrum is nature's most nutrient dense zoonutrient. And BioPharma's colostrum, the highest quality and purest whole colostrum available anywhere, fortified with proline rich polypeptides (PRP) in our patented NanoSorb™ technology, is a quantum leap in zoonutrient fortification.

*"Understanding how molecular structures have evolved to provide nutritional functions in animals will lead to a new generation of foods that can deliver on the promise of maintaining optimal health (in humans)."*-Robert E. Ward and J. Bruce, Zoonutrients and Health, Food Technology, Vol 57, March 03, pp 30- 36