

Colostrum and Anemia

September 30, 2009; By Dr. Anthony Kleinsmith

Dear consumer,

Your question regarding the use of colostrum for anemia, has been forwarded to me. I am a business and technology consultant with extensive knowledge regarding the formation and composition of bovine colostrum and its health-related applications in humans and animals.

Anemia is a medical condition that occurs when the blood becomes deficient in healthy red blood cells. Since red blood cells are the main means to transport oxygen to the tissues, anemia almost always is associated with fatigue because the muscles and organs aren't getting enough oxygen.

There are many types of anemia, all being very different in their causes and medical treatments. Some forms are very treatable with diet changes and nutritional supplements while others may represent lifelong health problems.

Anemia caused by blood loss, which can occur slowly over a long period of time and can often go undetected. This kind of anemia results from ulcers, hemorrhoids, inflammation of the stomach lining, cancer and overuse of non-steroidal anti-inflammatory drugs, such as aspirin and ibuprofen.

Anemia caused by faulty red cell production, such as in sickle cell anemia, an inherited disorder that affects African-Americans, where the crescent-shaped red blood cells break down rapidly. Anemia caused by decreased red cell production, such as in iron deficiency anemia where a lack of sufficient iron impedes hemoglobin formation and, accordingly, diminishes red blood cell production. Deficiencies in vitamin B-12 and folate can lead to megaloblastic anemia since the body requires these vitamins to produce red blood cells.

Anemia caused by problems of the bone marrow may arise when there is a defect in the ability of primitive cells in the marrow, called stem cells, to develop into red blood cells. Aplastic anemia is a very serious medical condition that occurs when there is a significant reduction in the number of stem cells in the marrow through a hereditary disorder or marrow damage

resulting from medications, radiation, chemotherapy or infection.

Anemia caused by premature destruction of red blood cells such as occurs in hereditary conditions like thalassemia where the red blood cells cannot mature and grow properly. Hemolytic anemias, where the red blood cells rupture prematurely, can be triggered by various drugs, infections, snake or spider venoms and certain foods.

Autoimmune hemolytic anemia occurs when the immune system inappropriately perceives the red blood cells to be foreign and attacks them. This type of anemia is frequently found in individuals with broad ranging autoimmune diseases, like systemic lupus erythematosus (SLE).

The most common symptoms found in association with many types of anemia are:

- Easy fatigue and loss of energy
- Rapid heartbeat, particularly with exercise
- Shortness of breath and headache, particularly with exercise
- Difficulty concentrating
- Dizziness
- Pale skin
- Leg cramps
- Insomnia

Colostrum is an amazing resource of substances necessary to facilitate the development and repair of cells and tissues, stimulate and support the immune system and assure the effective and efficient metabolism of nutrients. There are very small quantities of growth hormone in complete first milking colostrum, but growth hormone is an extremely potent hormone and, thus, not much is required. It directly affects almost every cell in the body and significantly influences the development of new cells, causing them to generate at a more rapid rate when a sufficient quantity of the hormone is present. Scientific studies have shown that one of the benefits of ingesting even small amounts of growth hormone is repair of damaged cells and limitation of the deterioration of cells associated with the aging process.

Insulin-like growth factor-1 (IGF-1) and its closely related counterpart insulin-like growth factor-2 (IGF-2) are potent hormones that are found in association with almost every cell in the body. IGF-1 is the most potent and best described of this pair. These molecules are present in all mammals and,

in every case, have a very similar chemical structure regardless of the species. IGF-1 is absolutely necessary for normal cell growth and for the development of the fetus in the uterus. Both IGF-1 and growth hormone are also required for normal development outside of the uterus and that is why they are both present in colostrum.

Scientific knowledge about the IGFs, what they do and how they act on cells in the body, has developed very quickly during the past few years. It is now known that there are specific sites, called receptors, on almost all cells in the body capable of interacting with IGF-1. These sites have a structure that fits perfectly with part of the IGF molecule and this interaction triggers a series of chemical events within the cell. There are also 6 different proteins present inside the cell and on the surface of the cell that react to the attachment of IGF-1 to its receptor. These are called insulin-like growth factor binding proteins (IGFBPs) and they control the actions of IGF-1 on the cell. In addition, inside the cell there are at least 87 other related proteins either capable of binding to IGF-1, altering its actions, or influencing the effects of the IGFBPs. These are called insulin-like growth factor binding protein-related proteins (IGFBP-rPs). The entire collection of these proteins is referred to as the Insulin-like Growth Factor Binding Protein (IGFBP) Superfamily. The key event that triggers the effects of any of these proteins appears to be the interaction of IGF-1 with its specific cell-surface receptor, an event that some of these proteins regulate.

The multitude of available IGF-1-binding proteins and related proteins available in the cell is indicative of the many potential effects that the binding of IGF-1 to its specific cell-surface receptor can have on cells. To keep these many effects under control, some of the binding proteins act as checks and balances, allowing the secondary chemical switches in a cell to be turned on and then turning them off when it is appropriate. Therefore, IGF-1 is like the captain of a ship. When it binds to its specific receptor, the ship can move forward, but there are all kinds of systems in place to keep it moving at the right speed and in the right direction.

The main triggered events include activation of the process by which the cell grows and reproduces itself and maintenance of the metabolic pathways by which the cell converts glucose into glycogen and uses amino acids to create proteins. The actual pathway by which the cell uses glucose and converts it to glycogen is first switched on by the binding of insulin to its specific cell surface receptors. Glycogen is stored in the liver and muscles and is the reserve source of readily available energy when the muscles are exercised. The IGFBP Superfamily also has a direct role in how

the cell uses amino acids to build proteins. As we age, the ability of our body to create an adequate supply of IGF-1 is diminished. Thus, by eating a well-balanced diet and maintaining a constant supply of IGF-1 in our body, we can keep the ship moving at the right speed and in the right direction. And when we exercise this becomes even more critical since there is an increased demand for glycogen to provide energy to our muscles and the preference is to build more muscle protein. Even more importantly, as we age the cells in our body do not reproduce themselves as well and, since IGF-1 is a primary factor, along with growth hormone, in the ability of cells to grow and reproduce, it is highly desirable to have an appropriate level of IGF-1 in the circulation through dietary supplementation to limit the ever increasing rate of cell death.

High quality first milking colostrum also contains lactoferrin, an iron-transport protein. When lactoferrin is present in the gastrointestinal tract, it captures iron from digested nutrients and facilitates its transport into the body. Having sufficient lactoferrin available is a valuable aid to those afflicted with iron deficiency anemia. In addition, high quality colostrum contains carrier proteins for the B-complex vitamins that substantially enhance their uptake into the bloodstream.

From the above, we can conclude that making sure that there are sufficient quantities of growth hormone, IGF-1, lactoferrin and the carrier proteins in the bloodstream, as would occur by dietary supplementation with a high quality first milking colostrum, like that distributed by Immune-Tree, means maintaining control over cell repair and replacement; carbohydrate and protein metabolism and absorption of iron and the B-complex vitamins. The end result is a means to help your body regenerate the cells and provide the substances that it needs to conquer anemia and overcome the associated fatigue.

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I hope this answers your questions.

To your good health - always.

Sincerely,
Alfred E. Fox, Ph.D.

Dr. Alfred E. Fox holds a Ph.D. from Rutgers University in Microbiology (Immunochemistry) and has more than 25 years of senior management experience at Carter-Wallace, Baxter Dade Division and Warner-Lambert, where he was responsible for research and development and regulatory affairs. He was also the founder and president of two biotechnology companies focused on agribusiness and environmental monitoring, respectively. For the past 15 years, Dr. Fox has been the President of Fox Associates, a business and technology consulting firm serving small- to mid-size companies in the human and animal healthcare fields. He focuses primarily on marketing and regulatory issues and for the past 10 years has continuously consulted to bovine colostrum manufacturers, where he has gained regulatory approval for their products, been a technical advisor, helped design and develop marketing strategies and served as an expert witness in legal matters.