



Colostrum and Hairy Cell Leukemia

Dear consumer,

Your inquiry concerning hairy cell leukemia and colostrum has been forwarded to me. I am a business and technology consultant with extensive knowledge about the formation of colostrum and its applications in humans and animals.

Leukemia is characterized by the overproduction of immature, atypical white blood cells, which can be detected in the circulation. The white blood cells, called leukocytes, are produced primarily in the bone marrow and the spleen. The exact cause of most leukemias remains unknown, but it is known that exposure to high-energy ionizing radiation can cause the disease and continuous exposure to certain chemicals, such as benzene, may also be responsible. Human T-cell leukemia is known to be caused by two different viruses and certain genetic abnormalities have also been implicated. Recent research has identified a gene responsible for some acute leukemias in children. The gene changes places with a gene on a different chromosome and the resulting combination forms a protein that converts normal white blood cells into cancerous cells. This gene is involved in about 90 percent of acute leukemias in infants and about 40 percent of acute leukemias in older children.

Colostrum is an amazing resource of substances necessary to support the development and repair of cells and tissues, to assure the effective and efficient metabolism of nutrients and maintain a healthy immune system. This is not completely surprising when we consider that it is intended for consumption by a newborn calf that has received none of the substances in utero that will be required for its proper development outside of the uterus and that its growth will occur at a very rapid rate, creating a huge demand for energy. In addition, it is ideally suited for consumption by humans since most of its biologically active components have essentially the same chemical structure as the same components found in humans and there are no known negative side effects to its routine consumption other than those that might be experienced by individuals who are sensitive to the lactose (milk sugar) normally found in dairy products.

Routine utilization of a high quality colostrum product as a dietary supplement should prove very beneficial to an individual with any form of leukemia. The condition has an impact on the ability of the immune system to respond to a variety of infections since the tendency is to produce immature, non-functional white blood cells. In addition, since there is usually an associated anemia and the disease itself places energy demands on metabolism, there is usually a large energy drain on the body. If the individual is receiving chemotherapy, the energy drain is usually significantly amplified since most chemotherapeutic agents ordinarily interfere with carbohydrate and protein metabolism.

As we age, our immune system loses its ability to regulate itself efficiently, primarily because the thymus, a glandular structure in the upper chest that is considered the seat of the immune

system, begins to shrink after puberty and almost disappears by the time we are 50 years old. The thymus is the site where T-cells mature and prepare to defend the body against invading microorganisms. Therefore, as we age, we lose some of our inherent ability to fight off infections. It has been shown that the thymus can be restored to normal function by the growth factors in colostrum. In addition, colostrum contains specific hormones, called thymosin subunits (alpha & beta) that regulate the functions of the thymus and other substances, like proline-rich peptide (PRP) that help to keep the immune system under control.

In addition, 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, healthy 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 accelerated development and repair of damaged tissue. It is believed that this occurs through the growth hormone/insulin-like growth factor axis.

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. 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 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. 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.

It is also very, very important to recognize that all colostrum products are not the same and, despite the claims made by their manufacturers, they do not all contain every beneficial component at an optimum concentration and, in many cases, they have been manipulated and may be missing some of the essential components. When choosing a colostrum product, you should be certain that it is made from only first milking bovine colostrum collected within 6-8 hours after birth of the calf and that the colostrum is "complete" and that none of the components have been removed, including the fat. I have personally been responsible for testing of several different brands of colostrum for human use and can attest that the results prove that the products distributed by Immune-Tree contain the highest quality complete bovine colostrum available today.

I hope that this information is beneficial and answers your question.

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.

