Colostrum and Glioblastoma

October 15, 2009; By Dr. Anthony Kleinsmith

Forty to fifty percent of tumors of the central nervous system are gliomas, with approximately 50% of these being glioblastoma multiforme. This type of tumor occurs most frequently in adults between 50-80 years of age, but can occur in younger adults and does develop in children. The tumor most commonly forms in the frontal lobes of the brain and spreads into the surrounding tissue forming a characteristic "butterfly" pattern when viewed by magnetic resonance imaging (MRI). The most common symptom is headache, with other complications depending upon the location of the tumor and the extent of its growth.

When you were about 13 years old, your body's health support mechanisms began to deteriorate. Before puberty, when you were just a young child, the very foundation of your immune system was being established by a small gland-like structure in the upper chest, the thymus. It is within this structure that the cells mature that will determine the appropriate type of response that your immune system should mount after an insult and then cells from the same source will regulate the quality and intensity of that response. Cells from a properly functioning thymus are also responsible for screening the body for abnormal cells, such as those associated with the development of early stage malignancies. After puberty, the thymus begins to shrink and ultimately almost disappears by age 50-60. So, although the immune system develops more immunologic memory with time, it gradually loses the ability to efficiently and effectively orchestrate and direct the actual immune response itself and afford protection to the body.

Scientific studies have shown that insulin-like growth factor (IGF-1), a major component of high quality bovine colostrum, and the IGF superfamily of proteins can restore and maintain a fully functional thymus, even in adults. In addition, colostrum contains the alpha and beta chains of the hormone thymosin that act independently and in concert to regulate the functions of the thymus. Further, the proline-rich peptide (PRP) in colostrum is known to down-regulate the immune system and keep the response to a foreign substance under control. Other studies have shown that including only small amounts of colostrum in the daily diet of adult animals significantly enhances the ability of their white blood cells to respond to infection and destroy invading bacteria.

There are also 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 limitation of the deterioration of cells associated with the aging process. In addition, more recent studies have shown that small doses of growth hormone can accelerate the repair of damaged cells.

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.

GF-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 IGF's, 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 (IGFBP's) 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 IGFBP's. These are called insulin-like growth factor binding protein-related proteins (IGFBP-rP's). 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-1binding 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. 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.

Colostrum is an amazing resource of substances necessary to support the immune system, promote the development and repair of cells and tissues and to assure the effective and efficient metabolism of nutrients. However, it is 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 the above 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.

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