Colostrum and Diabetes

Dear consumer,

In answering your question about diabetes, it is important to separate which type of diabetes you wish to discuss. Type 1diabetes is the least common form and represents a condition where cells in the pancreas produce little or no insulin, meaning that the individual has a radically impaired ability to metabolize glucose and requires routine injections of insulin. This condition is autoimmune in nature and is definitely genetically linked. Type 2 diabetes, also known as insulin-resistance, is a condition where the pancreas produces enough insulin, but the metabolic pathway for processing glucose is impaired. This is the most common form of diabetes and is considered a metabolic deficiency treatable by exercise, dietary control and supplementation.

The tendency toward Type 2 diabetes is also believed to be genetically linked. Although you have not described the nature of your thyroid disorder, most of these conditions are also autoimmune in origin resulting in impaired production of hormones necessary for normal metabolism. Autoimmune diseases represent an immune system that attacks the bodies own tissue and, therefore, is out of control. 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. 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 thymosins (A & B) that regulate the functions of the thymus and other substances, like proline-rich peptide (PRP) that help to keep the immune system under control.

With regard to the impaired metabolism in Type 2 diabetes. 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 significant quantities in colostrum and 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 normal

metabolism. Scientific knowledge about the IGFs, what they do and how they act on cells in the body has developed very quickly during the last 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-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. 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.

Leptin is a small, hormone-like protein that is also present in colostrum. It can suppress appetite and is involved in regulating the metabolism of fats. Insulin, which is also found in colostrum, and leptin work together. When insulin is present, mature fat cells (adipocytes) in the body release leptin. It is also believed that the size of the fat cells is a major factor in determining how much leptin will be released, small fat cells release more than large fat cells. In addition, there are sites on the surface of the cells in the pancreas that produce insulin where leptin can attach. Therefore, a close relationship exists between the control of carbohydrate and fat metabolism and a deficiency in leptin may be associated with obesity. From the above, we can conclude that making sure that we have sufficient quantities of IGF-1 and leptin in the bloodstream, as would occur by dietary supplementation with a high quality first milking colostrum, means assurance of more effective regulation of protein, carbohydrate and fat metabolism. When this is coupled with a well-balanced diet and exercise, the end result will be more muscle and less fat - a leaner body mass. This becomes even more important as we age since metabolism increasingly slows naturally over the years. 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.