Tuberculosis is a chronic or acute bacterial infection caused by a rod-shaped bacterium, *Mycobacterium tuberculosis*. The organism primarily attacks the lungs, but may also affect the kidneys, bones, lymph nodes and central nervous system. Children and people with weakened immune systems are the most susceptible to the disease, with one-half of all untreated cases being fatal. According to the World Health Organization (WHO), one individual becomes infected every second with eight million new cases every year. More than 2 million deaths result from the disease annually.

Tuberculosis is transmitted from person to person, usually via moisture droplets containing the bacterium. When an individual with active tuberculosis coughs, sneezes or speaks, small droplets containing 2-3 bacteria surrounded by a layer of moisture are released into the air and, if another person inhales these droplets, the bacteria may lodge in their lungs and multiply. The bacteria can also be transmitted through an open wound and, thus, are of concern to healthcare workers. Tuberculosis has also been reported in people who have received tattoos and in individuals who have been circumcised with non-sterile instruments.

An individual can be infected with *Mycobacterium tuberculosis* and never develop the disease since his/her immune system may destroy the bacteria completely. In fact, only 5-10 percent of individuals infected with the organism actually develop the disease.

If a person does contract the infection, the disease will develop in two stages. In the first, or primary, stage, there are no noticeable symptoms and the disease is not contagious. White blood cells, primarily macrophages, ingest the bacteria and transport them to the lymph nodes where they may be either inhibited or destroyed or they may multiply.

If the bacteria are inhibited, white blood cells develop a wall around the inactive bacteria and form a mass, known as a granuloma or tubercle. As long as the immune system remains strong, the bacteria remain walled off and inactive and the tubercle gradually accumulates calcium deposits. These tubercles usually heal and leave permanent scars that can be seen on x-rays of the lungs. The bacteria can remain dormant for many years, but, if the immune system weakens, the tubercle can open, releasing the bacteria with the subsequent development of active tuberculosis.

In the secondary, or active, stage of the disease, the formerly dormant bacteria multiply in the lungs and may spread to other organs via the
bloodstream. Tubercles continue to develop in the lung, allowing fluid or air to collect between the lungs and the lining of the lungs, and progressively destroying lung tissue. At this stage of the disease, the infected individual may cough blood or phlegm and carriers of the organism can infect others.

There are general preventative measures that can be taken to reduce the spread of the disease, such as adequate ventilation of closed spaces, which disperses the bacteria. There are also vaccines available that are made from weakened variants of other species of Mycobacteria. However, these vaccines are most effective in preventing the disease in children. Drug treatment has become the primary approach to treatment. Combinations of antibiotics are used for periods of 6-12 months since single drug therapies often result in bacterial resistance to the drug.

As for many things in life, understanding what you are dealing with helps one to understand how to prepare an effective defense and, when dealing with infectious agents, a good defense is always the best offense. If an individual is in tune with his/her body and aware of his/her health status, there is something that they can do to help them keep fit and healthy and capable of dealing with diseases like tuberculosis. It is entirely possible for an individual to exercise reasonable control over his/her own destiny. The answer is a nutritionally balanced diet, moderate routine exercise and daily dietary supplementation with high quality first milking bovine colostrum from Immune-Tree.

Regulating the immune system --- that is having the switches available to turn the system on with sufficient intensity to respond effectively to a challenge like tuberculosis, orchestrating how the response will play out, pushing the response to its maximum and having the right players to clean-up after the job is done --- are all steps that most of us take for granted every day of our lives. The only time that we recognize that something is out of step is when we become ill and, then, we run to the doctor and seek out chemicals to put into our bodies so that things will go back into phase --- hopefully. The realities are that things were probably out of phase long before the body screamed for help and that the individual likely could have avoided becoming ill if he/she was only conscious of some facts.

First, one needs to realize that unless you are 13 years old or less, your body’s health support mechanisms have already begun to deteriorate and they will not get any better unless you do something about them. 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, like a bacterial or virus infection, and then cells from the same source will regulate the quality and intensity of that response. After
puberty, the thymus begins to shrink and ultimately almost disappears by age 50-60. So, the immune system gradually loses the ability to efficiently and effectively orchestrate and direct the actual immune response itself and, as we age, we become more and more susceptible to diseases. This becomes even more important when diseases like tuberculosis occur since the immune system has to be maximally functional to deal with the attacking bacteria and provide the best opportunity to destroy them.

And here is what you can do about it. 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), also called thymulin, 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 and viruses. So, the answer to keeping your immune system tuned up, under control and capable of responding efficiently and effectively to an insult is to make sure that you supplement your daily diet with high quality first milking colostrum.

Now, let's talk about controlling the deterioration of cells and localized inflammation that are associated with tuberculosis. 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 limitation of the deterioration of cells and accelerated repair of damaged and inflamed tissues, both being significant manifestations of diseases like tuberculosis.

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.

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 is 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. An adequate supply of glycogen in the body translates to more metabolic and physical energy, which means having the means to overcome the fatigue normally associated with most diseases.

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 and repair themselves as well, particularly in association with disease, and, since IGF-1 is a primary factor, along with growth hormone, in the ability of cells to grow and reproduce and repair themselves, it is highly desirable to have appropriate levels of growth hormone and IGF-
1 in the circulation through dietary supplementation with a high quality first milking bovine colostrum.

Colostrum is an amazing resource of substances necessary to strengthen and support the immune system, potentiate the development and repair of cells and tissues; and 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. In many cases, they have been manipulated and may be missing some of the essential components. When choosing a colostrum product, one needs to be certain that it is made only from first milking bovine colostrum collected within 6 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 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.

References:


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