

Colostrum and Canine Cardiomyopathy

By: Alfred E. Fox, Ph.D.

Cardiomyopathy is a type of heart disease in which the heart is abnormally enlarged, thickened or stiffened. This usually weakens the heart's ability to pump blood. The condition ordinarily begins in the lower chambers of the heart (the ventricles) and, in more severe cases, may affect the walls of the upper chambers of the heart (the atria or auricles).

There are two general types of Cardiomyopathy, **ischemic** (lack of oxygen) and **non-ischemic**. In an ischemic Cardiomyopathy, there is a hardening of the arteries on the surface of the heart, reducing the amount of oxygen-rich blood delivered to the muscle. Eventually, the heart muscle enlarges due to the extra work that it must do in the absence of enough oxygen-rich blood. The specific cause of non-ischemic Cardiomyopathy is not known, but it is associated with genetic factors, viral infection, the build-up of fats and proteins in the heart muscle and an excess of iron (hemosiderosis) in the heart. In humans, the excess use of alcohol can also play a role.

There are three main types of non-ischemic Cardiomyopathy.

Dilated Cardiomyopathy: This involves dilation or enlargement of the lower-left chamber of the heart (the left ventricle).

Hypertrophic Cardiomyopathy: This involves an abnormal growth of muscle fibers in the heart muscle.

Restrictive Cardiomyopathy: This involves restriction of the blood flow into the lower chambers of the heart (the ventricles) because their walls are too rigid.



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.

In humans, dilated Cardiomyopathy accounts for almost 87% of all non-ischemic Cardiomyopathy cases. In dogs, this condition is also the most common form of the condition and usually starts at between 4-10 years of age, occurring most frequently in larger breeds.

The following is a documented personal experience of an individual with congestive heart failure following a diagnosis of Cardiomyopathy. As the summary relates, the individual routinely supplemented his diet with high quality first milking colostrum which is the focal product for human. Colostrum for pets often incorporates the high quality first and second milking.

Testimonial

"At the time he was diagnosed with congestive heart failure, Arlan Reynolds had already had other heart problems but he had somehow been able to maintain his work and his outside interests. However, congestive heart failure meant limiting physical exertion for the rest of his life. "I was told that I had an enlarged heart - that there was a certain percentage of it that was actually 'dead.' I was given very little hope of ever having a normal life again," recalls Arlan. When he discovered colostrum and began taking it, Arlan had no expectation for what might happen. He faithfully took 8-10 capsules/day and he continued with his regular nutritional program. As time went on, he noticed an increase in energy and stamina but he had no idea what was really happening until 12 months later when he went in for his annual physical exam. "My doctor took X-rays of my heart along with other routine tests," says Arlan. "He compared the X rays with the ones which had originally been taken. Then he sent me to a special facility to have his findings substantiated. After numerous other tests, including more X-rays, an EKG and an echo-cardiogram, the doctor told me that he didn't understand what had taken place, but that all the tests indicated my heart had returned to normal size," relates Arlan. My doctor said that in all his years of practice, he had never seen an enlarged heart return to normal size. Arlan's next question to the doctor was, "Are you telling me that now I can play racquetball?" The doctor's reply, was simply, "I would highly recommend it."

Excerpted from an article in The Colostrum Option vol 3, 2000, titled, "Doctors Can't Explain His Recovery from Congestive Heart Failure."

The benefits realized here were most likely due to the small amounts of growth hormone and substantial amounts of insulin-like growth factor-1 present in high quality bovine colostrum. Growth hormone is extremely potent and, thus, only a small quantity is required. It directly influences the generation of new cells and the repair of existing tissues.

By contrast, insulin-like growth factor-1 is far more powerful and has a much broader range of effects on cell development, the control of metabolism and the derivation of energy.

Insulin-like growth factor-1 (IGF-1), and its closely related counterpart insulin-like growth factor-2 (IGF-2), are potent hormones found in association with almost all cells in the body. IGF-1 is the best described and most potent of this pair. These molecules are produced by all mammals and, in every case, have a very similar chemical structure regardless of the species. IGF-1 is essential for normal cell growth and tissue repair.

Scientific knowledge about the IGFs, what they do and how they act on cells in the body has evolved very rapidly during the past few years. It is now known that there are specific receptors on almost all cells in the body capable of interacting with IGF-1 and triggering a series of chemical events within the cell. There are also 6 different proteins present inside the cell and on cell surfaces that control the actions of IGF-1 on the cell after it binds to a receptor. These are called insulin-like growth factor binding proteins (IGFBPs). In addition, 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) super family. 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 main source of readily available energy when the muscles are exercised. The IGFBP super family 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 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.

References:

Anwar A, Gaspz JM, et al; Effect of congestive heart failure on the insulin-like growth factor-1 system, *Am J Cardiol* 2002; 90(12): 1402-5.
Hwa V, Oh Y, Rosenfeld RG; The insulin-like growth factor binding protein (IGFBP) superfamily, *Endocr Rev* 1999; 20(6): 761-87.

LeRoith D; Insulin-like growth factor receptors and binding proteins, *Endocrinol Metab* 1996; 10(1): 49-73.

Kohn DT, Kopchick JJ; Growth hormone receptor antagonists, *Minerva Endocrinol* 2002; 27(4): 287-98.

Li H, Dimayuga P, et al; Arterial injury in mice with severe insulin-like growth factor-i (IGF-1) deficiency, *J Cardiovasc Pharmacol Ther* 2002; 7(4): 227-33.

Rosenfeld RG, Hwa V, et al; The insulin-like growth factor binding protein superfamily: new perspectives, *Pediatrics* 1999; 104(4): 1018-21.

van den Beld AW, Bots ML, et al; Endogenous hormones and carotid atherosclerosis in elderly men, *Am J Epidemiol* 2003; 157(1): 25-31.

I am a business and technology consultant with extensive knowledge and experience regarding the formation of bovine colostrum and its applications in humans and animals, particularly as it applies to specific medical conditions.

I hope that this information will be useful and will help you to understand something more about your this condition and some of the benefits that can be realized by routine use of a high quality bovine colostrum product.

Sincerely, Alfred E. Fox, Ph.D.