

# Colostrum for Companion Animals

## Technical Bulletin

### **The Saskatoon Colostrum Company Ltd.**

The broad benefits of colostrum to promote health in a variety of species at all stages of life are ascribed to immunological and metabolic components present in bovine colostrum. Veterinarians have long recognized that colostrum is necessary for the health of the newborn. The colostral transfer of maternal immunoglobulins from mother to neonate during the first hour of life has been established as essential for survival in many species. In addition to immunoglobulins, colostrum is rich in other components that have documented beneficial effects in promoting the differentiation, growth, and health of a variety of tissues and organs (Playford et. al. 2000).

It has been recognized that the benefits of colostrum are not confined to only neonates. The following is a partial list of reported benefits of bovine colostrum in older animals and humans.

- Bovine colostrum and protein fractions from colostrum have been shown to be effective for treating and preventing infectious diseases in human and various animal species beyond the neonatal period (Reviewed in van Hooijdonk, A.C.M. et. al 2000, Tacket C. et. al. (1989) *The Lancet* 23: 709 – 712, Rump J. et. al. (1992) *Clin. Invest.* 70: 588 – 594).
- Factors isolated from colostrum accelerate healing, balance blood sugar, reduce insulin need, and increase muscle and bone growth, while reducing fat (Reviewed in Pakkanen R. and Alto J. (1997) *Int. Dairy J.*: 285 – 297).
- Colostrum has been demonstrated to enhance athletic performance in humans (Mero et. al. (1997) *J. Appl. Physiol.* 83: 1144 – 1151; Buckley, J. D. et. al. (2000) *Asian Aust. J. Anim. Sci.* 13: 312 – 315; Sanders, A. J. and Van Gammeren, D. (2000) *Nutrition* 3: 343 – 247).
- Colostrum reduces damage to the gastrointestinal tract due to the digestion of nonsteroidal anti-inflammatory drugs (Playford, R. J. et. al. (1999) *Gut* 44: 653 – 658 and Playford, R. J. et. al. (2001).
- Colostrum also reduces the detrimental effects attributable to microbial infection, decreases fat metabolism in old animals, reduces allergies and autoimmune diseases, heart disease, athletic stress, leaky gut syndrome, cancer, diabetes, and wound healing (Reviewed in Rona, Z. P. (1998) *Am. J. Natural Med.*
- Colostrum improves liver function by reducing the effects of toxic metabolites on the liver and provides desirable protein-rich nutrition for people suffering from a variety

of liver disorders (U.S. Pat. No. 5, 710, 132, 1996, Use of bovine colostrum milk as a preparation for the protection of the liver).

- Colostrum strengthens the natural defense systems in the mouth resulting in improved healing of gum disorders (Canadian Pat. No. 2, 175, 319).

Renewed interest in the broad benefits of colostrum to promote health in a variety of species at all stages of life prompted veterinarians and scientists at SCCL to investigate the possibility of developing a "complete colostrum" product for pets. To this end, they have developed colostrum processing techniques to preserve several key components that have been linked to beneficial health effects, as well as analytical techniques to measure their concentration. Some of these factors are summarized below:

**1. Metabolic Factors** - Colostrum contains high levels of numerous growth and cell differentiating factors such as insulin like growth factor-1 (IGF-1) and epidermal growth factor (EGF).

**Insulin-Like Growth Factor** (IGF-1) has been shown to be an important pathway by which growth hormone exerts its metabolic and growth promoting effects. IGF-1 may be beneficial in combating the metabolic effects of aging. This growth factor promotes cellular mitogenesis and differentiation, enhances cellular glucose uptake, and stimulates the synthesis of proteins (Review by Pakkanen, R. and Aalto, J., 2000).

**Epidermal Growth Factor** (EGF) promotes epithelial cell growth and differentiation. (Carpenter, G. 1980).

**2. Immunological Factors** - Immunoglobulins, lactoferrin, and lysozymes are the best understood beneficial agents present in colostrum. These and other antimicrobial agents present in colostrum work in concert to enhance defenses against microbial attacks of the gastrointestinal tract (Review by Pakkanen R. and Aalto J., 1997; Shah, N. P., 2000; van Hooijdonk A.C.M. et. al., 2000; and Steijns J.M. and van Hooijdonk A.C.M., 2000). The concentration of immunoglobulins in colostrum is several times higher than that in serum. Colostrum immunoglobulins are not absorbed into the systemic circulation past the neonatal period. Antimicrobial proteins such as immunoglobulins, lysozymes, and lactoferrin resist the digestive enzymes and low pH of the upper gastrointestinal tract due to the presence of trypsin inhibitor in colostrum, thus allowing these proteins to remain biologically active.

**3. Other Important Factors**

Alpha-lactalbumin acts as a co-enzyme in the synthesis of lactose and is also immunomodulatory, enhancing interleukin-1 production and increasing the metabolic activity of the cells of the immune system (Wong, et. al. 1997 *Vet. Immunol. Immunopathol.* 56: 85 – 96).

Trypsin inhibitor prevents the proteolytic degradation of proteins in the digestive tract and enhances the bioavailability of co-administered molecules. The presence of this component may protect other important factors from digestive degradation (Quigley, J. D. et. al. *Supra*).

### **Pets Enjoy the Taste of Colostrum**

Palatability trials have shown that dogs enjoy the taste of colostrum. In one trial, each of 30 dogs (convenience sample) was offered its regular ration of commercial dog food, or its regular ration sprinkled with 5 grams (one teaspoon) of colostrum per imperial cup of dog food. Ninety-six percent (29/30) of the dogs readily consumed the colostrum supplemented ration, and forty-one percent (11/30) demonstrated a clear preference for it.

Owners of twenty-six out of the 30 dogs enrolled in the above trial agreed to maintain their dogs in the trial for 30 days and to record all perceived changes over this time period. Dogs in this trial phase were fed colostrum as a nutritional supplement daily for 30 days, at the dose of 5 grams (one teaspoon) per day. Even though this was a trial of short duration, some owners were able to observe changes and reported noticeable beneficial effects.

Overall, 33% of the dog owners reported benefits:

- Three owners reported a clear improvement in the appetite of their dogs.
- Five reported a clear improvement in hair coat quality.
- One reported improved consistency of feces.

None of the 26 owners reported any adverse reactions to colostrum after 30 days of feeding. Longer-term studies are being conducted.

### **Manufacturing**

Colostrum is manufactured by the Saskatoon Colostrum Company Ltd. in CFIA (Canadian Food Inspection Agency)-inspected facilities using approved outlines of production and quality assurance protocols. The product contains only colostrum collected after calving from Western Canada dairy cows.

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