

Value of ProCrypt™ for Immune Function

Maintaining good animal health and prevention of disease in cattle requires the development of a strong immune function in cows prior to breeding to maintain the health of her body and that of the developing calf. At birth, the calf must receive colostrum containing high optimum concentrations of IgG antibodies, cytokines, and maternal cells. Consuming adequate amounts of colostrum soon after birth will provide short term protection as the immune system begins development, progressing in small steps for about 6 months of age until the active immune function is mature and able to cope with environmental pathogens and disease elements.

Immune development progresses in three phases:

- **Innate immunity during fetal development:** Innate immunity progresses with the stage of fetal development until late gestation when the innate response declines just before calving.
- **Passive immunity from colostrum:** When the calf is born it has no defense against pathogens. Since the intestinal mucosa is open to immunoglobulins just six hours after birth it is critical the calf consumes colostrum as soon as possible (with in the first 30 minutes) to provide the passive immune protection. Colostrum quality is especially important for a broad and complete protection and this is dependent on the mother's immune status.
- **Active immunity:** Passive immunity is high for the first week after birth but declines over the next 2 -4 weeks. The degree of protection after the first week depends on the colostrum quality (IgG's, cytokine, and maternal cell levels) amount of colostrum consumed and how soon after birth the colostrum was consumed. Ideally, calves need a strong active immune function by weaning to maintain health and performance during the stress involved.



ProCrypt™ has shown value in all phases of immune development and function.

Research on Immune System Development

Traditional nutritional approaches to building immunity in cattle focused on meeting energy, protein, vitamin, and mineral requirements. These nutritional components are still essential to building and maintaining immune system tissues, but new research is also showing the important role of the commensal microflora or the normal indigenous microbes present on epithelial cells that significantly impact mucosal immunity and health.

Research on the gut microbiome is showing the importance of the microflora on mucosal surfaces. Colonization of the gastrointestinal tract after calving has shown a direct effect on mucosal immune system development and protection against infection of the young calf.

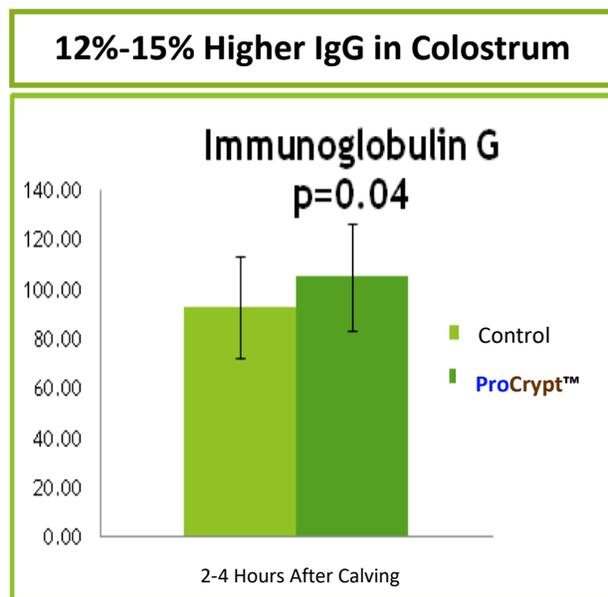
In addition, nutritional feeding programs that facilitate optimum populations of beneficial bacteria promote stronger immune function, especially in young dairy calves at the time of weaning.

ProCrypt™ Helps Maintain a Healthy Intestine and Optimum Colostrum IgG levels

Reducing the pathogen load on pastures and areas where cattle congregate, especially calving areas can reduce the risk of pathogenic infection and health issues in young calves.

Benefits of ProCrypt™:

- 12% -15 % higher IgG level in colostrum for optimum passive immune protection of the newborn calf
- Optimizes microflora balance of intestinal epithelium for optimum immune development
- Maintains antioxidant support in stress conditions important for strong immune function
- Maintains mucosal and crypt protection and tight junctions of intestinal villi and reduces “leaky gut”



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