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Feeding Frozen Versus Fresh Bovine Colostrum

Colostrum composition

Bovine colostrum contains fat, protein, carbohydrates (lactose), vitamins, minerals, hormones, maternal white blood cells (leukocytes), cytokines and growth factors [1, 2]. The high protein concentration is caused by a very high concentration of immunoglobulins (primary IgG), which is of particular importance to the neonatal calf, whose gut allows the passage of large immunoglobulins immediately following parturition, thereby ensuring passive immunity [3].

Colostrum freezing and the coloQuick system

Establishment of a colostrum bank by freezing the colostrum is essential and necessary to provide highquality colostrum to all newborn calves in a herd. The coloQuick system includes freezing colostrum in individual bags, laid flat in the freezer to decrease the time for freezing and thawing. Rapid freezing and thawing reduce the risk of bacterial growth.



The coloQuick system provides a quick, easy-to-use, uniform and careful thawing process with strict temperature regulation, ensuring the preservation of immune components in the colostrum. The concentration of immunoglobulins decreases at temperatures above 60oC [4] and therefore the heating of colostrum must be well-controlled to maintain colostrum quality.

The effects of freezing on colostrum components

Nutrients and immunoglobulins in colostrum are preserved despite freezing [5-7], and no difference in serum IgG concentrations has been observed in calves fed fresh versus frozen colostrum [8].

Bioactive substances in colostrum includes a variety of cytokines and growth factors. A study on human milk shows that freezing of colostrum for 6 months did not decrease the concentration of selected bioactive components [9].

Somatic cells in colostrum (e.g. white blood cells) are negatively affected by the process of freezing, but the exact mechanisms are still unknown [10, 11].

Advantages of freezing colostrum

The advantages of a systematically approach to colostrum management in the herd, including freezing of high-quality colostrum, by far exceed the possible disadvantages. The high value in providing all calves with a sufficient volume of colostrum with high IgG concentration quickly after birth, is recognized by a decrease in calf morbidity and mortality as well as an increase in herd productivity [12, 13].

coloQuick International was established in 2015 and is an innovative business, focusing on dairy calf nutrition. We provide natural methods to increase productivity and reduction of antibiotics through focusing on the first hour of the calf's life.

Hanne Skovsgaard Pedersen is a veterinarian and holds a PhD. She has experience from clinical practice and 10 years as a scientist. Her focus is on research and development of documentation about calf biology



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