

The Colostrum Counsel



Welfare of food animals is a rapidly growing factor in consumer selection of their meat and dairy products. Deficient colostrum feeding practices can lead to significant suffering of the young calf. Adequate colostrum feeding will not only ensure the welfare of your calves, but also improve the marketability of your animals.

Contribution of good colostrum feeding practices to the welfare of the newborn calf

A state of well-being is achieved when the nutritional, environmental, health and behavioral needs are met. The opposite is a state of suffering and the better recognized causes of suffering in the newborn calf are: breathlessness, hypothermia, hunger, sickness and pain (Mellor and Stafford, 2004). It is generally presumed that circumstances that lead to weakness or death involve severe suffering. The European Food Safety Authority has developed a risk analysis approach for evaluation of animal welfare and has carried out a risk analysis of calf welfare in intensive farming systems (EFSA, 2006). This analysis involves characterization of the major hazards resulting in suffering and an assessment of the likelihood of calves being exposed to each hazard. According to EFSA's evaluation the magnitude of risk to calf well-being due to failures in colostrum management is very high and very serious for the affected individuals (EFSA 2006, 2012).

Good colostrum feeding practices promotes calf wellbeing

The contribution of colostrum ingestion to the health and

well-being of the newborn calf is well established. The best recognized benefits of timely colostrum ingestion include: i) an immediate source of energy essential for thermogenesis and survival of the newborn ii) immunological protection of the neonatal calf against infectious agents during the first weeks of life.

The first adaptation of a newborn mammal to the external environment is the requirement that the animal initiate independent metabolic and respiratory processes to obtain oxygen and energy. Calves are born with extremely limited energy reserves of glycogen and fat. It is estimated that the glycogen reserves are depleted during the first 3 hours of life and that body fat may be able to fulfil the energy needs for about 12 hours (Girard et al. 1992). Approximately 20% of the solids in good quality colostrum are a specialized fat that is readily absorbed and metabolically active to immediately produce heat energy in the newborn. Calves ability to rapidly enter into a state of anabolic metabolism following birth is directly related to the ingestion of colostrum providing the critical substrates (Girard 1986).

The newborn calf quickly develops the capacity to generate protective immune responses to infectious agents, however in the immediate neonatal period disease protection is totally dependent on the passive transfer of antibodies found in colostrum (Robison et al. 1988). Colostrum transfers a broad array of antibodies derived from the serum of the cow that protect the newborn until it mounts effective

secondary immune responses on its own. The colostrum-derived antibodies allow for exposure of the newborn to the pathogens in the environment without disease and pathology. The quantity and quality of passive protection attained by the calf depends upon the mass of immunoglobulin/antibodies consumed by the calf during the first few hours of life which is directly related to the concentration of antibodies in the colostrum, the volume of colostrum consumed, and the age of the calf when it was consumed.

Poor colostrum feeding practices compromise calf welfare

Calf mortality during the first 24 hours of life can reach 8% and is frequently associated with failures in metabolic/respiratory adaptation (Lombard et al. 2007). Strategies to promote respiration, reduce energy loss (prevent heat loss or excessive heat), and assure early consumption of high levels of fat in colostrum can significantly reduce mortality rates in newborn calves. Failure to provide sufficient amounts of colostrum soon after birth could potentially trigger 3 of the identified noxious welfare experiences in the newborn; hunger, hypothermia, and respiratory distress. The consumption of high quality colostrum to promote these early metabolic adjustments should be considered a critical component of care to promote calf well-being.

In calves that survive this early metabolic adaptation (the first 24 hours of life), the period of greatest risk for disease morbidity and mortality is the next 3 weeks of life. Disease and deaths during these weeks are primarily due to inadequate protection against infectious agents. It is widely accepted that in newborn domestic animals immune protection from infectious disease in the early weeks of life is highly dependent upon the passive transfer of maternal immunoglobulins present in colostrum. (Robison et al. 1988, Virtala et al. 1999). Failure of passive transfer of antibodies could potentially trigger 2 additional noxious welfare experiences in the newborn; sickness and pain.

In conclusion good colostrum feeding practices help ensure calves achieve a state of wellbeing whereas deficient colostrum feeding could lead to significant suffering of the newborn and/or young calf.



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