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Short Communication

Effects of Fat Supplements in Milk-fed Holstein Calves during Temperature Stress

Bahram Mohtashami[1]*, Sayyad Seifzadeh[2], Hamed Khalilvandi-Behroozyar[1] and Jamal Seifdavati[2]

[1]*Department of Animal Science, Urmia University, Iran*

[2]*Department of Animal Science, University of Mohageg Ardabili, Iran*

***Corresponding Author:** Bahram Mohtashami, PhD of Animal Nutrition, Urmia, West Azerbaijan, Iran.

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Maintenance energy requirements of calves increase during periods of temperature stress (cold and heat stress). Health and growth of calf as well as its functional characteristics and its economic life in the future will affect the nutrition of milk in the pre-weaning period. Because milk prices and milk replacements are high, the calf management program has traditionally been focused on limiting milk or milk replacements. Any strategy that reduces fluid intake and increases calf starter intake will reduce each of these variables. Calf starter intake increases rumen development, increases body weight in the days before weaning and also decreases body weight loss in the days after weaning. In general, alternative heifer management focuses on factors that increase physiological processes and subsequently enhance puberty and production potential. Generally, appropriate growth and proportion of genetic capacity of the animal can reduce the age of the first mating.

Fats are usually consumed to increase dietary energy intake. Adding fat supplements increases the absorption of lipid soluble vitamins. The energy requirement of calves increases during thermal and cold stress. On the other hand, rearing young calves in outdoor facilities during the winter months increases the energy requirement due to cold stress. One of the potential ways to compensate for this energy is to add fat to calf diet. In newborn calves, nutrient digestibility may be reduced due to poor rumen development. Thus, dietary energy can be increased with the use of fat. Linoleic and linolenic fatty acids are the most important poly unsaturated fatty acids [1].

Fatty Acids are also considered to be the precursors to eicosanoids, which act as signaling molecules in regulating inflammatory pathways and regulating the function and secretion of adipose tissue by binding to PPAR. The n-3 Fatty Acids are known for their anti-inflammatory properties, whereas the n-6 Fatty Acids are pro-inflammatory substances. These findings prompt animal nutritionists to incorporate higher n-3 FA sources in animal diets to provide an optimised immune function, consequently improving animal growth performance, especially in high tension conditions.

Mohtashami., *et al*. [2] showed that supplementing Soybean oil, rich in n-6 FA, in a starter diet (3%, DM basis) increased starter intake, daily gain, weaning weight and some growth indicators compared with the Fish oil supplemented or un-supplemented starter feeds. However, supplemented Fish oil (3%, DM basis), rich in n-3 FA, increased the immune function of calves and increased FE, which was partly due to the reduced starter intake. Results show that a mixture of n-6 and n-3 FA sources (1.5% SBO and 1.5% FO, DM basis) may be recommended for milk-fed calves to avoid the reduction in starter intake and improve immune system performance.

Bibliography

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