Opinion

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Journal of Animal Research and Nutrition

2023
Vol.8 No.1:065

The Evaluation of Secretion of Glucocorticoids for Animal Feeding

Kayleigh Shepard*

Department of Animal Science, University College Dublin, Dublin, Ireland

***Corresponding author:** Kayleigh Shepard, Department of Animal Science, University College Dublin, Dublin, Ireland, E-mail: shepard_k@gmail.com

Received date: December 11, 2022, Manuscript No. IPJARN-23-15808; **Editor assigned date:** December 13, 2022, PreQC No. IPJARN-23-15808 (PQ); **Reviewed date:** December 24, 2022, QC No. IPJARN-23-15808; **Revised date:** January 04, 2023, Manuscript No. IPJARN-23-15808 (R); **Published date:** January 11, 2023, DOI: 10.36648/2572-5459.8.1.065

Citation: Shepard K (2023) The Evaluation of Secretion of Glucocorticoids for Animal Feeding. J Anim Res Nutr Vol. 8 No1: 065

Description

Animal welfare is the quality of life as perceived by the animal itself. It is also the state of an animal in its attempt to cope with its environment. Animal welfare has high ethics and economic importance. Thus the need to develop parameters for assessing animal welfare. An acute increase in Glucocorticoid (GC) concentration is necessary for adaptation to a stressful situation.

Secretion of Glucocorticoids

Glucocorticoids also play a significant role in metabolic, cardiovascular, and immune systems. Glucocorticoid enhances effective learning through the hippocampus and other normal body functions. That is why we remember events (either positive or negative) associated with strong emotions. Long-term secretion of GCs has catabolic effects. Thus, affecting animal health. Measuring GC is one of the ways of assessing animal welfare. But, high GC concentration does not only indicate pain or suffering. We report that stress and emotion trigger similar physiological responses. So, measuring GC levels cannot differentiate between positive and negative states. We conclude that GC shows circadian rhythms and episodic spikes in some species. Values from a single sample point are not reliable to make conclusions about a condition. Training animals for blood collection may reduce stress. Thus not causing bias in the GC concentration measured.

Selection for feed efficiency, the ratio of output (milk yield) to feed intake, has traditionally been limited on commercial dairy farms by the necessity for detailed individual animal intake and performance data within large animal populations. The objective of the experiment was to evaluate the effects of individual animal characteristics animal breed, genetic potential, milk production, Body Weight (BW), daily Total Dry Matter Intake (TDMI), and energy balance on a cost-effective production efficiency parameter calculated as the annual fat and protein (milk solids) production per unit of mid-lactation BW. A total of 1,788 individual animal intake records measured at various stages of lactation from 200 cows were used. The derived efficiency traits included daily kilograms of milk solids produced per 100 kg of BW and daily kilograms of milk solids produced per kilogram of TDMI. The TDMI per 100 kg of BW was also calculated at each stage of lactation. Animals were subsequently either ranked as the top 25% or bottom 25% based on their lactation production efficiency.

Selenium (Se), one of the indispensable nutrients for both human health and animal growth, participates in various physiological functions, such as antioxidant and immune responses and metabolism. The role of dietary Se, in its organic and inorganic forms, has been well documented in domestic animals. Furthermore, many feeding strategies for different animals have been developed to increase the Se concentration in animal products to address Se deficiency and even as a potential nutritional strategy to treat free radical-associated diseases. Nevertheless, studies on investigating the optimum addition of Se in feed, the long-term consequences of Se usage in food for animal nutrition, the mechanism of metallic Se Nanoparticle (SeNP) transformation, and the nutritional effects of SeNPs on feed workers and the environment are urgently needed. Starting from the absorption and metabolism mechanism of Se, this review discusses the antioxidant role of Se in detail. Based on this characteristic, we further investigated the application of Se in animal health and described some unresolved issues and unanswered questions warranting further investigation. This review is expected to provide a theoretical reference for improving the quality of food animal meat as well as for the development of Se-based biological nutrition enhancement technology.

Dairy cow breed significantly affected animal characteristics over the entire lactation and during specific periods of intake measurements. Jersey crossbred animals produced more milk, based on a lower TDMI, and achieved an increased intake per kilogram of BW. Similarly, they produced more milk over longer lactations, weighed less, were older, and achieved a higher TDMI compared with the animals. Both cows achieved superior production efficiency due to lower maintenance energy requirements, and consequentially increased milk solids production per kilogram of BW and per kilogram of TDMI at all stages of lactation. Indeed, within breed, animals weighed 20 kg less and produced 15% more milk solids over the total lactation. In addition, achieved increased daily milk solids yield and milk solids yield per kilogram of TDMI during intake measurement periods. Moreover, the strong and consistently positive correlations between and detailed production efficiency traits reported here demonstrate that is a robust measure that can be applied within commercial grazing dairy systems to increase the selection intensity for highly efficient animals.

Sustainable and efficient conversion of feed to milk has been an important determinant of farm productivity within all dairy

production systems due to the prominent effect of feed costs on total milk production costs. More recently, the importance of Feed Efficiency (FE) has taken on even greater prominence due to its considerable additional effects on both the environmental efficiency and resilience of dairy production systems. The underlying principle of most FE evaluations is to improve the balance between output (production) and input (feed intake) characteristics. On that basis, recent reviews of dairy cattle improvement programs have concluded that the inclusion of other production efficiency parameters as estimates of FE in selection indices worldwide can further accelerate the rate of improvement in animal traits influencing both productivity and environmental sustainability.