

Management Consistencies to Minimize Subacute Rumen Acidosis: A Herd Probiotic

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Abstract

This article elaborates on a practical viewpoint into minimizing sub-acute rumen acidosis (SARA) through management consistency in high-producing ruminants of notable dairy cows. This is a herd probiotic. The modern management and veterinary sciences encounter serious challenges in optimizing rumen fermentation. The problem often starts from very simple errors in routine farm management practices. Mismanaged feed preparation and presentation, suboptimal feeding timing and frequency, mismatched feeding and milking, short-term outsized changes in diet properties and several other significant factors indicated in this article make SARA occur easily and frequently.

Keywords: Management; Rumen; Subacute acidosis; Metabolic disorder

Problem Analysis: Prevention and Mitigation

Sub-acute rumen acidosis (SARA) is a frequently occurring metabolic disorder in modern dairy farms. This common metabolic problem is of high economic and health significance since it is not clinical and is thus uneasy to diagnose and treat [1-3]. As such, prevention must be a gold goal in eradicating such a major complication. By definition and arguably, SARA occurs when rumen pH drops below 5.6-5.8 for more than 3-6 h daily. Although controversy exists on true pragmatic definition of SARA, prolonged acidotic rumen conditions (pH<5.6) especially for certain periods after feed delivery reduces microbial efficiency and mass yield, and as a result, decreases production longevity and feed efficiency. Moreover, dairy cow economical life drops as a consequence of many metabolic cascades among which are weakened immunity and impaired crucial proteins synthesis towards microbial and host maintenance.

A major reason that makes SARA a difficult challenge to overcome is its dependence on a multitude of animal and non-animal management factors [4-9]. This article highlights management inconsistencies as a determining factor for prolonged SARA incidence. As such, minimizing management inconsistencies is considered a herd probiotic in postmodern farming. Inconsistent 1) inclusion of dietary ingredients, 2) feed processing and mixing, 3) mixed feed preparation, 4) particle size distribution, 5) final ration moisture content and texture quality, 6) ration freshness at delivery, 7) feed delivery frequency, 8) top dress feeding sequence, 9) milking and feeding sequence, 10) cow grouping strategies, 11) dry cow management and feeding, 12) heifer raising programs, 13) bunk management, and 14) wet and ensiled forages moisture and quality are among managerial factors contributing to SARA incidence in commercial dairy herds [10-25]. All of these managerial factors must be carefully taken into account when predicting SARA incidence and thus when planning to minimize its occurrence.

Notably important is inter-cow differences in SARA incidence or in fact in showing unfavorable production and health responses to the conditions described as SARA. Cereal grains and forage processing and feeding strategies are usually considered critical in managing SARA [9-26]. However, the extensive international farm experience suggests that it is not SARA per se that introduces challenges to dairy cows and the entire enterprise, but it is dairy cow's responses to SARA that is of high importance. In other words, SARA may be more harmful to groups of cows than others. This implies that there are cows that somehow are insensitive or less sensitive to SARA. This notion suggests that specialized mechanisms may exist that can be developed by at least certain groups of cows to manageably encounter SARA and overcome its adverse effects on animal physiology, metabolism and health. This is of merit to profoundly study. Research is also required to enlighten the important management factors discussed above. Such information would help making cows metabolically and physiologically prepared against SARA. Detailed mechanisms that cows may develop to become less sensitive to SARA (in terms of adverse impacts on health and longevity) would be uncovered. This requires internationalizing agro technologies to more effectively and broadly accomplish goals in improving animal agriculture-driven entrepreneurship and economy [27].

Implication

This viewpoint article developed an on-farm policy to minimize SARA and its effects on cow production and health. Management consistency or the dairy herd probiotic is an often overlooked but greatly influential tool to prevent and manage SARA. The word "management" refers to the many farm and animal related policies, programs and actions that ensure dairy cows remain healthy enough to produce profitably and sustainably. Global programs on internationalizing agro technologies are required towards sustainable animal agriculture.

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References

1. Nikkhah A (2015) Cereals Bond Trounces Sub-acute Rumen Acidosis. *Int J Vet Health Sci Res* 3: 1-2.
2. Nikkhah A (2015) The Art of Manipulating Nutrient Bioprocessing In Ruminants: Behind the Rumen Wheel. *J Bioprocess Biotech* 5: e134.
3. Nikkhah A (2015) Chronoregulation of Ruminants Feed Intake: A Cropping Science. *Adv Crop Sci Technol Adv Crop Sci Tech* 3: e125.
4. Nikkhah A (2015) Optimizing Diurnal Patterns of Feed Intake and Rumen Fermentation based on Milking Management. *J Adv Dairy Res. In Press*.
5. Nikkhah A (2015) Optimizing Dairy Herd Starch Efficiency via Strategic Heifer Management. *Int. J Dairy Sci Process. In Press* 2: 1-2.
6. Nikkhah A (2014) Dairy Ruminant Nutrient Intake Orchestration: A Novel Chronophysiological Discipline. *Journal of Advances in Dairy Research* 2: 2.
7. Nikkhah A (2015) Managing Transition Dairy Cows for a Less Stressful Lactation: The Nocturnal Crave. *Int J Dairy Sci Process* 2: 16-17.
8. Nikkhah A (2015) Grain Serving of Postmodern Dairy Cattle: Benefits of Processing Overestimated. *Int J Dairy Sci Process*. 2(3): 14-15.
9. NRC (National Research Council) (2001) Nutrient Requirements of Dairy Cattle. Natl. Acad, Sci, Washington DC, USA.
10. Nikkhah A (2015) Forage Inevitability in Early Dairy Calf Raising: Nature Manages. *Journal of Dairy Veterinary and Animal Research* 2: 00035.
11. Nikkhah A (2015) Relatively Finer but Uniformly Mixed Rations Permit Effective Bunk Management: A Farmlot Covert. *Adv Dairy Res* 3: 2.
12. Nikkhah A (2015) On Rumen Microbial Evolution: Food Security Prospects. *J FoodNutri* 2: 011.
13. Nikkhah A (2015) Timely Provision of Different Feeds in Dairy Enterprises: A Circadian Science. *Adv Dairy Res* 3: e116.
14. Nikkhah A (2015) Gut Adaptation to Healthy Starch Assimilation in Dairy Ruminants: A Lifetime Development. *Adv Dairy Res*. 3: e117.
15. Nikkhah A (2015) Dry or Steam Rolling of Soft Grains: Dairy and Beef Bioprocessing Perspectives. *J Bioprocess, Biotechniq* 5: e124.
16. Nikkhah A (2015) Production Curve Management of Starch Nutrition in Ruminants: A Global Bio technique. *J Bioprocess, Biotechniq* 5: e123.
17. Nikkhah A (2015) Bioprocessing of Moisturized Cereals: Ruminants Crave J Bioprocess. *Biotechniq* 5: e121.
18. Nikkhah A (2015) The Forage Art in Managing Component Feeding: A Persistent On-Farm Success. *EC Agriculture* 1.1: 104-105.
19. Nikkhah A (2015) A Pragmatic Analysis of TMR vs. Component Nutrition for Dairy Cows: A Real Wisdom. *World J Vet Sci* 3: 1-2.
20. Nikkhah A (2014) Grinding as a Most Economical Healthy Bioprocessing Bio technique of Cereals for Postmodern Ruminants. *J Bioprocess Biotech* 5: e119.
21. Nikkhah A (2014) Revisiting Feeding Systems in Postmodern Ruminant Agriculture: Challenging the TMR. *EC Agriculture* 1: 21-22.
22. Nikkhah A (2014) Managing Nutritional Disorders by Timing of Food Observation and Ingestion: Insights from Dairy Science. *Int J Dairy Sci Process* 2: 1-2.
23. Nikkhah A (2014) On Energy Policies in Animal Production: Avoiding Starchy Explosions. *Innovative Energy Policies. Innovative Energy Policies* 3:e110.
24. Nikkhah A (2014) Title». *Biol Rhythm Res* 45: 563-577.
25. Nikkhah A (2014) Timing of feeding: a postmodern management strategy to modulate chronophysiological rhythms in rumen fermentation kinetics. *Biol Rhythm Res* 45: 533-540.
26. Nikkhah A (2010) Barley grain for ruminants: A global treasure or tragedy. *J Anim Sci Biotechnol* 3: 22-29.
27. Nikkhah A (2015) Internationalizing Agro technology: An Obligation towards Sustainable World Entrepreneurship and Economy. *Agrotechnol* 4: e115.