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In This Issue

Location

Research

Yang, M., Zou, Y., Wu, Z. H., Li, S. L., & Cao, Z. J. (2015). **Colostrum quality affects immune system establishment and intestinal development of neonatal calves**. *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2014-9238

BACKGROUND: Much literature has been published concerning the difference between either feeding colostrum or milk replacer, but a paucity of published data is available on the difference between feeding true colostrum (first milk after calving) and transitional milk (subsequent 3-5 milk secretions) in neonatal calves.

PURPOSE: The purpose was to explain the effect of feeding either colostrum, transition milk, or bulk tank milk only on the day of birth on IgG absorption, immune and antioxidant status, and intestinal morphology and histology in neonatal calves.

RESULTS: Passive transfer of IgG, serum antioxidant concentrations, growth index, and intestinal development are markedly dependent on colostrum quality ingested on the day of birth. Although effects were similar between colostrum and transitional milk fed groups in some parameters, calves that received colostrum performed better in IgG absorption, antioxidant activities and serum growth factors, villus length and width, crypt depth, and mucosal thickness. On the other hand, villi in bulk tank milk fed calves were severely atrophied, and some histological changes were detected.

CONCLUSIONS: The authors concluded that findings shows that higher quality colostrum can help calves establish their own immune defense mechanism and antioxidant system immediately after birth, which could assist in reducing the effects of harmful microorganisms, promoting intestinal development, and as a result decrease morbidity and mortality in calves. Therefore, it is essential to supply high-quality colostrum to neonatal calves.

ACCESS THE ARTICLE…

Weiss, W. P., Azem, E., Steinberg, W., & Reinhardt, T. A. (2015). **Effect of feeding 25-hydroxyvitamin D3 with a negative cation-anion difference diet on calcium and vitamin D status of periparturient cows and their calves**. *Journal of Dairy Science, 98*(8), 5588-6500. doi:

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BACKGROUND: Feeding diets with a negative dietary cation-anion difference (DCAD) before partition is an established method of reducing clinical and subclinical hypocalcemia. Concentrations of 25-$(OH)D_3$ are used to indicate vitamin D status, but a study with humans suggests that conversion of vitamin D_3 into 25-$(OH)D_3$ is reduced at high intakes of vitamin D_3. If this occurs in the bovine, higher concentrations of circulating 25-$(OH)D_3$ may be obtained with direct supplementation of 25-$(OH)D_3$ compared with supplementing vitamin D_3. Synthesis of 1,25-$(OH)_2D_3$ from 25-$(OH)D_3$ is regulated, but direct supplementation of 25-$(OH)D_3$ compared with vitamin D_3 may increase 1,25-$(OH)_2D_3$ concentrations to a greater extent.

PURPOSE: The authors hypothesized that supplementing 25-$(OH)D_3$ to cows fed an anionic diet that induced a substantial metabolic acidosis would enhance Ca status of peripartum cows and reduce the prevalence of clinical and subclinical hypocalcemia. In addition, supplementing 25-OHD_3 should increase concentrations of 25-$(OH)D_3$ and 1,25$(OH)_2D_3$ in plasma and colostrum, which may improve vitamin D status of the young calf.

RESULTS: Supplementing cows with 25-$(OH)D_3$ in combination with a negative DCAD diet for the last 13 days of gestation enhanced vitamin D status of the cows based on serum concentrations of 25-$(OH)D_3$ and 1,25-$(OH)_2D_3$. This translated into increased concentrations of 25-$(OH)D_3$ in colostrum and milk and in the serum of the neonatal calf. A short-lived increase in serum Ca before calving occurred with this treatment, but no effect on serum Ca was observed at calving and in the early postpartum period. Although no statistical differences were observed in the incidence of clinical milk fever, feeding 6 mg/d of 25-$(OH)D_3$ resulted in the highest incidence rate and it did not reduce subclinical hypocalcemia over DCAD + D diets alone.

CONCLUSIONS: The authors concluded that feeding 25-OH vitamin D with a negative DCAD diet increased vitamin D status of the cow and her newborn calf but had minimal effects on calcium status and did not have positive effects on the incidence of hypocalcemia.

ACCESS THE ARTICLE…

De Vliegher, S., Fox, L. K., Piepers, S., McDougall, S., & Barkema, H. W. (2012). **Invited review: Mastitis in dairy heifers: nature of the disease, potential impact, prevention, and control**. *Journal of Dairy Science, 95*(3), 1025-1040. doi: 10.3168/jds.2010-4074

BACKGROUND: Heifer mastitis is a remarkable disease, given that these animals have never been milked and that the milking process is generally considered one of the principal risk factors for contagious mastitis in mature cows. Additionally, their teats have not been challenged by the milking vacuum. In general, coagulase-negative staphylococci (CNS) are the predominant cause of intramammary infection and subclinical mastitis in heifers around parturition, whereas *Staphylococcus aureus* and environmental pathogens cause a minority of the cases.

PURPOSE: The purpose of this review is to summarize the literature on heifer mastitis, focusing on the nature of the problem, causative pathogens, potential effects on future productive performance, risk factors, and nonantibiotic strategies to prevent and control the disease. Practical recommendations that could be added to the National Mastitis Council (NMC) 10-point program are included.

RECOMMENDATIONS: Farm-specific interventions that should be in place on any farm are as follows (10-point program to prevent and control heifer mastitis):

1. Improve general udder health management at the farm level to decrease the pressure of infection with udder pathogens from older cows to heifers;

2. Control for cross-suckling in calves and young stock;

3. Implement an effective and efficient fly control system;

4. Keep young and primigravid heifers in a clean and hygienic environment and separate from multiparous animals—provide as much attention to this group of animals related to hygiene and cleanliness as is spent on lactating animals;

5. Avoid any nutritional deficiency—monitor vitamin E and selenium levels when any doubt exists, especially in relation to CM; zinc, copper, and vitamin A play a role as well and could be checked;

6. Minimize the risk of negative energy balance before and after calving through appropriate transition feeding systems;

7. Reduce the incidence of udder edema through optimized peripartum management;

8. Minimize stress around calving (e.g., by not moving heifers to the calving pen when already in labor) and minimize incidence of dystocia and peripartum disease;

9. Consider use of internal teat sealants prepartum where a high risk of environmental mastitis exists in the peripartum period;

10. Use prepartum antibiotic treatment in heifers under certain conditions only:

a. under the supervision of the herd veterinarian, within the context of a valid veterinary/client/patient relationship;

b. after quantification of the problem and identification of major pathogens (not CNS) as the cause through culturing;

c. choice of the antibiotics should be based on antimicrobial susceptibility testing;

d. testing for residues before every milk delivery;

e. upgrading of management at the same time—discontinue treatment as soon as new management strategies become effective.

CONCLUSIONS: Heifer mastitis can affect the profitability of dairy farming because of a potential long-term negative effect on udder health and milk production and an associated culling risk, specifically when major pathogens are involved. Prevention and control is not easy but is possible through changes in young stock and heifer management. However, the pathogenesis and epidemiology of the disease remain largely unknown and more pathogen-specific risk factors should be identified to optimize current prevention programs. If necessary, eliminating existing infections could be achieved using prepartum antibiotic treatment on a tactical basis.

ACCESS THE ARTICLE…

Calendar

A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at **http://vet.osu.edu/**

Ohio Dairy Health and Management Certificate Program

Module 6 – Milk Quality & Udder Health
Dec 3-4, 2015
Hilton Garden Inn, Columbus, Ohio
Spots are always available for specific module plan.

Organic Livestock and Poultry Health Series

This series provides veterinary CE at no-cost.

Upcoming webinars:

Defining and Monitoring Health Events in Dairy Herds
September 7, 2015 (12-1 p.m.)

Certified Organic Livestock Standards
October 8, 2015 (1-2 p.m.)

Organic Livestock Inputs
October 22, 2015 (1-2 p.m.)

Nutritional Management of Lactating Dairy Cows
November 9, 2015 (12-1 p.m.)

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