Role of Nutrition in Mastitis

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As dairy producers continually strive to prevent mastitis infections in their herds, they should remember that there is a relationship between proper nutrition and susceptibility/resistance to mastitis. Dr. Jerry Jones, Extension Dairy Scientist for Milk Quality and Milking Management at Virginia Tech, discusses this nutrition-mastitis relationship in the following article.

Studies have shown that resistance of cows to new mastitis infections can be influenced by dietary levels of vitamins E and A (or beta-carotene) and minerals including selenium (Se), copper, and zinc. Lactating cows are more prone to infection around calving. This is a time when the keratin plug in the teat end breaks down. There is significant risk for development of new mastitis infections in the udder and new cases of clinical mastitis during the first week of lactation. The killing ability of neutrophils (or somatic cells) was maximized by nutritional supplementation. Incidence and prevalence of mastitis was reduced by vitamin E/Se supplementation, especially heifers when given 21 days prepartum. Vitamin E appears to be especially important beginning at 7-10 days before calving through 3-5 days after calving. Cows supplemented with both vitamin E and Se had shorter rates and duration of clinical signs, a more rapid SCC response following microbial challenge, maintained lower bacterial colony-forming units, eliminated infections more rapidly, and had less severe clinical signs. Use of supplemental Se and vitamin E together reduced the severity and duration of E. coli infection and is more effective than either nutrient alone. Total confinement of dairy herds (zero grazing) results in increased feeding of stored forages that may be deficient in both vitamin E and Se. The possibility is great that dietary vitamin E and Se are inadequate in many dairy herds. It is recommended that cows fed stored forages need vitamin E supplemented at 1,000 IU/day for dry cows and 500 IU/day for lactating cows. In addition, there may be benefit of adding beta-carotene to the ration or feeding forages with adequate beta-carotene, because it enhanced killing ability of somatic cells against bacteria during the late dry and also decreased SCC during first 10 days of lactation, resulting in lower rates of new mastitis. Likewise, lack of copper supplementation of dairy heifers may result in deficiencies in white blood cells which could impair the ability of the animal to cope with disease. Rations should be formulated to meet the NRC requirements for copper and zinc.