Public Abstract

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Title:Effects of supplementation of dietary antioxidants and chelated trace minerals in periparturient dairy cows and subsequent response to intramammary bacterial challenge

The period around parturition is marked by metabolic imbalances which causes the animals to have decreased immune competence. During early lactation period, the cases of mastitis, inflammation of the mammary gland are more severe because of the immune suppression that is occurring. In order to seek nutritional alternatives to improve immunity of the dairy cows during this period, we conducted two experiments to investigate the effects of supplementation of synthetic dietary antioxidants and different sources of a blend of trace minerals on these two distinct situations of immune dysfunction in dairy cows. In the first experiment, the effects of these supplements on health, metabolism, and production variables of periparturient dairy cows were examined. Supplementation over calculated requirements may not be beneficial to cows that calved more than twice during their lives, although signs of improved antioxidant status and health improvement were seen when cows that calved only once in their lives were supplemented. Treatments administered did not affect intake or milk production in the same cows. For cows that calved more than twice during their life subjected to the combination of dietary antioxidants and organic trace minerals had increased rabies antibody titers in response to vaccination, suggesting an enhanced immune response. In the second experiment, we evaluated the response of supplemented early lactation dairy cows submitted to experimental mastitis. Supplementation may not be beneficial to cows that calved only once during their lives, although production variables were improved when cows that calved more than once in their life were supplemented with inorganic trace minerals. Milk quality was altered in the quarters that were infected. The ability to produced milk with the same amount of feed declined when cows had mastitis. In conclusion, response of cows varies among parities under different situations of stress. Interestingly, the effects of microminerals were different in these situations tested and the intensity of stress may affect it.