Vitamin E and Selenium Supplementation for the Prevention of Bovine Mastitis

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Mastitis, inflammation of the udder, is a highly prevalent disease that affects more than half of dairy cattle every year. The condition contributes to an estimated 60–70% of all antibiotics used on dairy farms and results in significant economic losses due to reduced milk yield and reduced milk quality. The transition period surrounding calving is a critical window of immune suppression in which cows experience disruptions in energy balance, oxidative status, and immune function, increasing susceptibility to intramammary infections. This literature review examines the role of vitamin E and selenium supplementation in preventing mastitis during this high-risk period. 9 randomized controlled trials, and 17 clinical studies were analyzed to evaluate mastitis incidence, somatic cell counts, immune function, and reproductive performance following supplementation. Evidence suggests that supplementation with 1000–2000 IU/day of vitamin E and 0.2–0.3 mg/kg dry matter of selenium may reduce mastitis incidence by up to 62% while also lowering somatic cell counts and improving neutrophil activity. The most effective outcomes were observed when supplementation occurred during the three weeks before and after calving. However, results varied depending on baseline nutrient status, dosage, herd management, and environmental conditions. The current level of evidence is based on a few small trials and more robust trials are needed. Although current evidence suggests vitamin E and selenium supplementation may have benefits as a preventive strategy for improving udder health and reducing mastitis risk, additional research is needed to determine optimal supplementation protocols and evaluate long-term impacts on dairy productivity and antibiotic use. Addressing these gaps may support more effective nutritional management strategies and improve animal health and sustainability in dairy production.