Mineral Supplementation for Improved Immune Function

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Dairy cattle are most susceptible to mastitis and other infections during the first two weeks after drying off, two weeks before calving, and the first two weeks after calving. Proper feeding of dry cows with attention to proper mineral supplementation can significantly improve immune function. On the other hand, deficiencies in minerals can result in immunodepression.

Milking herd rations when fed to dry cows are often deficient in copper, zinc, selenium and vitamin E which are the primary vitamins and minerals that affect immune function. This is one of the reasons that it is very important to balance a separate dry cow ration rather then feed dry cows a portion of the milking herd's ration. These minerals can be added to the dry cow grain mix, creating a palatable way for the cattle to consume the supplement.

Supplementation of trace minerals is only required at low levels to improve immune function. Vitamin E, selenium, copper and zinc have been shown to improve immune function, such as decreasing the incidence of mastitis.

Vitamin E and selenium act together to accomplish their purpose. They decrease the incidence of retained placentas as well as support immune function and neutralize small quantities of toxic substances. However, in this case more is not better. High levels of vitamin E and selenium can be toxic so they must be properly balanced in the diet to be effective. Some parts of the United States, such as Wyoming and the Dakotas, have soil that is naturally very high is selenium and supplementation is inappropriate. However, Kentucky is considered deficient so proper supplementation is recommended.

Copper and zinc have been shown to aid immune function in the prevention of mastitis. Since dairy cattle are most susceptible to mastitis early in the dry period and after calving, proper feeding of these two minerals can help cows get through this transition period smoothly. Of course, proper dry cow management including infusions of dry cow treatment and teat dipping is still essential to the prevention of mastitis, but adding copper and zinc to the diet should not be overlooked.

Taking care to formulate a dry cow ration with attention to the levels of copper, zinc, vitamin E and selenium helps improve immune function, which reduces the incidence of mastitis, leading to increased milk production.