

Study Examines Role of Immunomodulatory Feed Additives in Boosting Immunity and Lowering Mammary Infections

FINDINGS SUGGEST FEEDING OMNIGEN® AF IMPROVES ANIMALS' RESPONSE TO MASTITIS INFECTION

Mastitis is one of the most common – and costly – infections impacting dairy herd health and producer profitability. Fortunately, your dairy cattle nutrition program can help support your cows' healthy immune function, enabling them to better ward off infection. Given the severity of untreated mastitis, Phibro has made significant investments in research to better understand the syndrome and validate the effectiveness of its OmniGen family of products in helping improve immune function which can lead to reduced incidences of mastitis in their herds.

One such study aimed to examine the effects of feeding an immunomodulatory feed additive, OmniGen AF, to improve immune function leading to a possible reduction in mouse mammary gland infections caused by *E. coli* and its effect on markers of mammary gland immunity.

Twenty-four lactating mice were randomly assigned to one of the three treatment groups: 1. A negative control group fed no feed additive and was not infected with *E. coli*, 2. A positive control group fed no feed additive and received an intramammary infusion of 50 colony-forming units of bovine mastitis *E. coli* (*E. coli* challenge) and 3. A group fed OmniGen AF in conjunction with an *E. coli* challenge.

The animals were challenged on day 10 of lactation, following 14 days on the feeding protocols. At the conclusion of the study, mammary tissue was recovered and analyzed for *E. coli* DNA as a marker of the extent of *E. coli* infection. In addition, researchers evaluated mammary major histocompatibility complex (MHC) mRNA and myeloperoxidase (MPO) mRNA, which provide indexes of antigen presentation by phagocytic cells and neutrophil infiltration into mammary tissue.

The Findings

Feeding OmniGen AF to animals reduced mammary *E. coli* DNA accumulation by 60% ($P < 0.05$). The infection of mammary tissue with *E. coli* was also shown to significantly elevate mammary MHC and MPO mRNAs ($P < 0.05$) – and feeding OmniGen AF before *E. coli* infusion caused an even greater ($P < 0.05$) response in both MHC and MPO RNAs. The reduction in mammary gland infection was attributed to an increase in neutrophils infiltration into mammary tissues and increased expression of antigen-presenting molecules in the mammary gland.

While this study was conducted on mice, key takeaways may be extrapolated to dairy cattle: the product showed efficacy in boosting the animals' immune systems. Furthermore, the immunomodulation effect of OmniGen has been demonstrated in several dairy cattle research studies. The immune response enabled them to better fend off *E. coli*. A healthier immune response led to reduced mammary infection.

Visit TheOmniGenDifference.com or contact your local Phibro representative to learn more.