Effects of Maternal Dietary Yeast Supplementation on Immunoglobulin Concentrations Following Vaccination in Quarter Horse Foals

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Previous research has shown that maternal diet can influence immune responses in the offspring of humans and animals. In horses, the addition of yeast to the maternal diet has resulted in increased growth and nutrient retention in foals. However, the effect of maternal dietary yeast supplementation on immune responses in foals has not been studied. Therefore, the objective of this research was to evaluate the influence of maternal dietary yeast supplementation during late gestation and early lactation on immunoglobulin (Ig) concentrations in foals. Eight Quarter Horse mares (14.5 ± 7.5yr) were randomly assigned to one of two groups: Yeast or Control. All mares received a control diet of 0.5% BW of a 16% CP pelleted concentrate, with water and mixed grass hay *ad libitum*. Mares in the yeast treatment group also received 1 g/45.4 kg of BW/d of a live culture of *Saccharomyces cerevisiae* from 300 d of gestation to 90 d post-foaling. Foals were vaccinated at 120 and 148 d of age with a commercial multivalent equine vaccine. Blood samples were collected via jugular venipuncture immediately prior to vaccination and weekly thereafter for 4 weeks. Sera samples were analyzed for IgG(T), IgGa, IgGb, IgA and IgM concentrations using commercial ELISA assays and data were analyzed using the PROC Mixed procedure of SAS. At 21 d following the initial vaccination, IgG(T), IgGb, IgA and IgM concentrations were significantly greater in foals born from mares fed the dietary yeast supplement ($P < 0.05$). As expected, total IgG (IgG(T) + IgGa + IgGb) concentrations were significantly greater following the booster vaccination compared to the initial vaccination, regardless of treatment group. In summary, maternal dietary yeast supplementation during late gestation and early lactation influenced immunoglobulin concentrations in foals in response to vaccination and may be an effective way to enhance neonatal immune responses.