Influence of a Maternal Dietary Yeast Supplement on Immunoglobulin Concentrations in Foals from Birth to Four Months of Age

R. Leimbach, J. M. Reddish and K. Cole

Previous studies in multiple species have shown that maternal diet can affect immunoglobulin concentrations in their resulting offspring. To our knowledge, the effect of maternal dietary yeast supplementation on immunoglobulin levels in foals has not been studied. In this study eight Quarter Horse mares (14.5 ± 7.5 yr) 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 1g/45.4 kg of BW/d of a live culture of Saccharomyces cerevisiae from 250 d of gestation to 90 d postfoaling. All mares were vaccinated at d 300 of gestation against Eastern and Western equine encephalomyelitis, equine rhinopneumonitis (EHV-1 and EHV-4), equine influenza (type A2), tetanus and West Nile virus. Blood samples were collected from the foals via jugular venipuncture immediately after parturition (d 0), at 12 and 24 hr and 30, 60, 90, and 120 d postfoaling. Sera samples were analyzed for total IgG, IgGa, IgGa, IgGb, and IgGb(T), as well as IgA, IgM, and IgE concentrations using commercial ELISA kits. Data were analyzed using PROC MIXED of SAS and a p-value of 0.05 was considered statistically significant. Supplementing the maternal diet with live yeast did not influence foal IgG, IgGb, IgM, IgG, or IgE concentrations. However, IgGb(T) concentrations were significantly higher (P = 0.0063) on d 60 postpartum. To our knowledge, there is limited information about the effect of maternal dietary yeast supplementation on immune responses in foals.

OBJECTIVE

The objective of this research was to evaluate the influence of maternal dietary yeast supplementation during late gestation and early lactation on immunoglobulin concentrations in foals.

RESULTS

- Eight pregnant Quarter Horse mares (14.5 ± 7.5 yr) were randomly assigned to either Yeast or Control treatment groups.
- Mares in the yeast treatment group received 1 g/45.4 kg of BW/d of a live culture of Saccharomyces cerevisiae from d 250 of gestation to d 90 postpartum.
- Blood samples were collected via jugular venipuncture before suckling (d 0), 0.5, 1, 30, 60, 90, and 120 d postfoaling.
- Sera samples were analyzed for IgGa, IgGb, IgGa, IgGb, and IgGb(T), as well as IgA, IgM, and IgE concentrations using commercial ELISA assays.
- Data were analyzed using the MIXED procedure of SAS v 9.3.

DISCUSSION

In summary, maternal dietary yeast supplementation during late gestation and early lactation did not influence overall immunoglobulin concentrations in foals from parturition to 4 months of age.

BIBLIOGRAPHY


The Ohio State University / Department of Animal Sciences / Equine Program

Department of Animal Sciences / Equine Program