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Presence of Mycoplasma sp. in Lambs with Lung Lesions

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OBJECTIVES

To test the impact of NPCoat administration on the prevalence of lung lesions in lambs.

MATERIALS AND METHODS

NPCoat is a cattle product designed to combat respiratory disease (NPCoat; Camas, Inc.). NPCoat is an intranasal preparation of avian polyclonal antibodies against various respiratory disease pathogens, including *Pasteurella sp.* Lambs were assigned to 1 of 4 pens, and all lambs in one pen were treated with 0.5 ml/nostril of NPCoat or carrier. Lambs received the initial intranasal treatment at weaning and a second and third intranasal treatment 7 and 14 days later, respectively. Lambs were weighed every 2 weeks. All pens were in the same barn, and lambs were prevented from having nose to nose contact with lambs in other pens. All pens were fed the same diet, and lambs had feed available ad libitum. Lambs were weighted every 14 days. Lambs were slaughtered at a commercial packing plant, and lungs were collected and transported on ice to the South Dakota Animal Disease Research and Diagnostic Laboratory for lung lesion scoring, histological examination, and bacterial culture. A portion of the right cranial lobe of each lung was collected. Samples of lungs were cultured aerobically and for *Mycoplasma sp*. Additional samples were prepared for histological examination. Carcass data (fat thickness at 12th rib, ribeye area, and body wall thickness) were collected approximately 24 h after slaughter.

Lung lesion scoring: Lambs were determined to have severe lung lesions if over 50% of any lobe was consolidated. Lambs were considered to have moderate lung lesions if greater than 5% but less than or equal to 50% of a lobe was consolidated. Lambs were considered to have normal lungs if not more than 5% of any lobe was consolidated. Lungs were also examined for the presence of active abscesses or pleural adhesions.

Statistics: Effect of treatment on prevalence and severity of lung lesions were tested by Chi-square. Average daily gain, hot carcass weight, back fat thickness between the 12th and 13 rib, body wall thickness, ribeye area between the 12th and 13th rib, and yield grade data were tested for effect of treatment by ANOVA using JMP software (SAS, Inc. Cary, NC).

RESULTS

Treatment with NPCoat had no effect on the prevalence or severity of lung lesions ($P > 0.75$). Production traits, including average daily gain, hot carcass weight, back fat thickness between

the 12th and 13 rib, body wall thickness, ribeye area between the 12th and 13th rib, and yield grade, were not effect by NPCoat ($P > 0.30$). Histopathology indicated bronchopneumonia with mixed mononuclear cells present in lambs with lung lesions. Culture analysis confirmed the presence of *M. haemolytica* and *P. multocida* in lambs with lung lesions, and revealed the presences of *Mycoplasma sp*. Data were tested for effect of lung lesion prevalence or severity on the detection of *Mycoplasma sp*. by Chi square analysis. *Mycoplasma sp*. was present in a greater percentage of lungs with lesions than in lungs without lesions (51% vs. 15%; $P = 0.04$). However, the severity of the lung lesions did not affect the percentage of lungs which had positive cultures for *Mycoplasma sp*. (38% vs. 53% for moderate vs. severe lung lesions, $P = 0.42$). Treatment with NPCoat did not affect the presence of *Pasteurella sp*. or *Mycoplasma sp*. ($P > 0.17$). These results indicate administration of the current cattle formulation of NPCoat at the time of weaning is not effective at reducing the prevalence of lung lesions in sheep. These results also suggest strategies to reduce infection of *Mycoplasma sp*. may reduce the prevalence of lung lesions.