Relationship of *Pasteurella* spp. Isolated from Paired Nasal and Transtracheal Swabs from Calves with Clinical Signs of Bovine Respiratory Disease (BRD)

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Introduction

The objective of this study was to determine whether bacterial isolates from nasal swabs are representative of cultures obtained from the lower respiratory tract of feedlot calves exhibiting clinical signs of respiratory disease.

Calves used in the study were from a group of 350 freshly weaned Brahman and Continental crosses purchased from livestock auctions in Mississippi. Average weight of the calves was 540 lbs upon arrival at the research site. Animals demonstrating clinical signs of bovine respiratory disease (BRD) with a rectal temperature ≥104° F were included in the study. Forty calves with BRD were individually sampled using a guarded nasal swab and a guarded transtracheal swab.

Cultures of the swabs were used to presumptively identify matching *Pasteurella* isolates from the nasal and transtracheal swabs of individual animals. The identity of each matched pair was confirmed biochemically and serologically. Bacterial DNA ribotyping and antibiotic susceptibility were used to further confirm matching of *Pasteurella* isolates.

Materials, Methods and Results

Twenty-four matched pairs of isolates of *Pasteurella hemolytica* and 3 matched pairs of isolates of *Pasteurella multocida* were isolated. When both sampling techniques were positive for bacterial respiratory pathogens, the nasal swab identified the same bacterial species as the transtracheal swab, 96% of the time (based on culture, biochemical characteristics, and serology). The nasal swab was identical (based on DNA ribotyping) to the transtracheal isolate in 70% of the matched pairs. Six different ribotypes were observed for the *P. haemolytica* isolates and only 1 ribotype was observed for the limited number of *P. multocida* isolates. Of the 6 ribotypes observed among the *P. haemolytica* isolates, 2 ribotypes predominated and 16 of the 24 pairs were identical. Only 1 ribotype was observed for the 3 pairs of *P. multocida* isolates. All paired isolates displayed similar susceptibility to ceftiofur, erythromycin, tilmicosin, trimethoprim-sulphamethoxazole and florfenicol. Minor exceptions in antibiotic susceptibility were observed for ampicillin and spectinomycin.

These results suggest that nasal swab culture from an acutely ill animal can reliably predict the BRD pathogen found in the lower respiratory tract and can be used to determine antibiotic susceptibility.