Seeking More Effective Treatment for an Economically Important Disease

Project Title:
An Investigation of the Etiological Role of Mycoplasma sp. in Infectious Respiratory Disease

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Bovine Respiratory Disease (BRD) is a disease that frequently affects cattle soon after they enter a feedlot and results in significant economic losses. The causes of BRD are complex but almost always involve stress and both viral and bacterial infection. Symptoms vary greatly but include nasal and eye discharges, coughing, fever, decreased appetite, breathing difficulty, rapid breathing, depression and death. Currently, BRD is treated with a broad spectrum of antibiotics.

To better understand and define the causes of BRD, and to determine a more targeted and effective treatment, this project was undertaken. A total of 99 fall-placed feeder calves from 17 different feedlots that died within 60 days of entering the feedlot were examined. Ninety of the animals examined suffered from BRD of varying levels of severity. Nine control animals died from other causes. All of the feedlots selected for inclusion in the study followed a standardized set of preventative measures and therapeutic strategies. They also kept health records that recorded all animal events from feedlot arrival to feedlot exit.

Lung samples were analyzed to detect the presence of Mannheimia haemolytica (M. haemolytica), previously known as pastenella, the cause of shipping fever; Mycoplasma bovis (M. bovis), which is involved in respiratory disease as well as chronic pneumonia and polyarthritis syndrome (CPPS ); Histophilus somni (formerly Haemophilus somnus), which is another cause of shipping fever and also of brain fever; bovine viral disease virus (BVDVBD ), which causes respiratory, digestive and reproductive problems and suppresses the immune system; infectious bovine rhinotracheitis virus (IBR ), which causes red nose, a viral infection of the upper respiratory tract; bovine viral syncytial virus (BRSV ), which causes respiratory infections; and parainfluenza-3 virus (PI 3), which causes mild respiratory disease.

From the analysis of the lung samples, M. haemolytica and M. bovis were the most commonly identified pathogens. BVD virus and H. somni were less commonly found. Two or more pathogens were detected in 40 to 60 per cent of the study animals and there was a strong association among some of the diseases. For example, 96 per cent of BVD virus cases also involved M. haemolytica and 80 per cent of H. somni cases also involved M. bovis.

The results of this study confirm that several disease agents are involved in BRD, with M. haemolytica and M. bovis most often
involved. This study provides a benchmark so that future studies may determine if the disease agents causing BRD have shifted to favour other pathogens.

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