

Behavioral changes in calves after *Mannheimia haemolytica* infection

Bovine respiratory disease is an economically important disease that is caused by different environmental and individual factors, pathogens, and management practices. Among a variety of different bacterial species associated with bovine respiratory disease (BRD), *Mannheimia haemolytica* (MH) is regarded as a predominant bacterial pathogen. BRD causes behavioral changes in calves, in general, because sick animals spend less time on behavior that is not critical for survival. These behavioral changes may help us with the detection and treatment of sick animals. In a recent study conducted at the University of Florida, 24 male Holstein calves were infected with MH by inoculation into the tracheal bronchus. The calves at the age of 3 to 7 weeks were randomly enrolled to 1 of 2 treatment groups: (1) respiratory disease challenge induced by endoscopic inoculation with MH, or (2) inoculation with sterile normal saline as control (CON). Rectal temperature and health score were recorded from day 0 (day of inoculation) to day 6 after inoculation. Furthermore, the behavior of all animals was recorded by video. Additionally, calves were equipped with accelerometers. Cumulative accelerometer data were calculated on an hourly basis. The research group found that the calves infected with MH had a peak temperature at 12 h after inoculation and showed different behavioral patterns than CON calves, i.e. increasing lying times, reduced grooming, feeding and social interaction. Hence, these behavioral changes may be useful indicators to detect respiratory disease at an early stage.

Our conclusion: This study showed that the experimental MH challenge model resulted in a mild disease and induced different behavioral patterns. For the aim of developing an alert system, a model with mild or moderate cases of diseases is more valuable than calves with severe disease. The changed behavior of calves can be an important indicator to detect sick animals in an early stage, especially when the calves are housed in groups. However, further research is needed to monitor a greater number of calves in larger groups. (nr)

Source: Hixson et al. (2018), J Dairy Sci, 101:10351-10360.