

## Early treatment with non-steroidal anti-inflammatory drugs (NSAID) against development of respiratory disease in slaughter calves as an alternative to antimicrobial use

Nynne Capion<sup>1</sup>, Mette Bisgaard Petersen<sup>1</sup>

<sup>1</sup>*Department of Veterinary Clinical Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, 2630 Taastrup, Denmark*

### Introduction:

Pneumonia is the most frequent cause of disease and death in calves and is also responsible for the largest consumption of antimicrobials in veal calf production. Often the pulmonary inflammation following infection with viral agents induce a massive inflammatory response in the lung, causing loss of function and irreversible changes such as consolidation and atelectasis. In these initial stages of the viral disease when inflammation is causing a variation of clinical signs; mild affection of general demeanor and eating behaviour, fever, serous nasal and ocular discharge, dry cough and drooping ears, antimicrobial treatment is not effective. However, in the inflamed parts of the lung it becomes possible for opportunistic pathogens to establish a secondary bacterial infection that needs antimicrobial treatment. It is common to initialize flock treatment with antimicrobials later in the disease process when depression, coughing and mucopurulent discharge are observed. However, in many cases this is too late and calves that recover will have irreversible changes in the lungs, that affect production and welfare. The purpose of the study was to evaluate the effect of NSAID treatment in the earliest stages of pulmonary infection on the development of clinical signs.

### Materials and methods:

Clinical examination of 90, 1 to 4 weeks old calves were performed in a commercial veal calf herd. Calves were examined upon arrival and followed for one week. The clinical exam included: Rectal temperature, serous nasal and/or ocular discharge, assessment of general demeanor, spontaneous and/or provoked coughing and assessment of respiratory sounds on auscultation. Calves were housed in pens of 15 calves and within each pen the calves were randomly assigned to receive early NSAID treatment or serve as control. The treatment group received NSAIDs (meloxicam or flunixin) at the first three days (days 1-3) and the control group did not receive NSAIDs. In all other regards both groups followed the treatment protocol defined by the herd. The farmer was not aware of which treatment the calves received. The calves were given a combined respiratory score based on the clinical findings. Completely healthy calves received score 0 and the maximum score was 10.

### Results and Discussion:

Forty calves were assigned to the control group and 47 calves were assigned to the treatment group. The average score at day 1 was 4.5 for all calves. Eighteen calves received score 1 and one calf received score 10, during the study. In the control group the average clinical score decreased slightly within the first 3 days and then returned to the initial score a day 6. For the NSAID-treated group the average score decreased from day 1 to day 5 and then showed a slight increase up to day 6. The clinical score was significantly lower in the NSAID-treatment group than in the control group on day 5.

### Conclusion:

Early treatment with NSAIDs could reduce the clinical score in calves with pneumonia.

### Acknowledgements:

The study received funding from the Danish Cattle and Milk Levy Funds and was performed as a part of the "Robuste kalve" project.