

## DYNAMICS OF ANTIBODIES TO MANNHEIMIA HAEMOLYTICA IN VEAL CALVES IN BELGIUM

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The veal calf industry is specialized in rearing dairy and beef calves from the age of 14 days until 7 months on a milk diet. Grouping large numbers of young calves originating from different farms, the absence of vaccination protocols and the all-in/all-out production system lead to an epidemiology of the bovine respiratory disease (BRD) complex that differs from traditional calf rearing.

A study was performed to determine the duration of maternally derived antibodies as well as the onset of acquired immunity to *Mannheimia haemolytica* in veal calves.

The observational field study was performed on a total of 3497 calves on ten veal farms (6 Holstein Friesian (dairy), 2 Belgian Blue (beef) and 2 crossbreeds) in the North of Belgium. Jugular blood samples were taken from 250, convenience selected, calves (25 per farm) at arrival (14 days of age) and 6, 12, and 24 weeks thereafter. The samples were tested for the presence of antibodies specific for *M. haemolytica* by an in house ELISA.

Maternal antibodies were at least present until 6 weeks after arrival (8 weeks of age) on all farms. A rise in the average antibody titer, due to natural infection, appeared on 8 farms after week 6. Although a rise in the average antibody titer already occurred between week 6 and 12 on three farms, most farms (5) showed this rise between 12 and 24 weeks after arrival. 11% of the calves were seronegative at arrival, implying the absence of maternal antibodies. Of the seronegative calves present on a seroconverting farm, 77,2 % seroconverted between week 12 and 24. Only 9,0% seroconverted between arrival and 6 weeks and 13,8% between week 6 and 12. In two farms (6 and 7), where apparently no infection occurred, most animals were seronegative at 24 weeks after arrival. The seroconversion rates (% of animals with at least four-fold increase in *M. haemolytica* antibody titer) varied between the herds, with a minimum of 0 (herds 6 and 7) and a maximum of 92%. In all herds, where seroconversion was detected, seroconversion rates were higher in the interval 12-24 weeks than 6-12 weeks. A negative correlation was observed between the average antibody titers of the herds at 6 and 12 weeks after arrival and the seroconversion rate in that herd during the following weeks.

The transition from maternal to acquired immunity in veal calves showed a similar pattern as described in traditional calf rearing systems (Prado et al., 2006).