

Comparative analysis of immune response induced by different vaccines against bovine respiratory syncytial virus

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Bovine respiratory syncytial virus (BRSV) classified within the *Orthopneumovirus* genus of the *Pneumoviridae* family (ICTV 2024), is a major cause of bovine respiratory disease complex (BRD). BRSV has a global distribution and causes significant economic losses in the cattle industry. Our preliminary phylogenetic study identified circulating BRSV strains from subgroup II, and for the first time, subgroup VIII, an emerging phylogenetic subgroup in Wallonia. Vaccines against BRSV have been available since the late 1970s, with six vaccines currently on the market in Belgium: four live attenuated and two inactivated (phylogenetic subgroup II or III). However, the effectiveness of these vaccines in the field is uncertain, particularly with the emergence of this new viral strain. In this study, we assessed the immune response to vaccination. Five BRSV vaccines were administered to three seronegative heifers. Serum samples were collected prior to vaccination and on days 14, 28, 56, and 84 post-vaccination. Sera were analysed using a commercial enzyme linked immunosorbent assay (SVANOVIR® BRSV-Ab ELISA) to quantify BRSV-specific IgG1 levels and serum neutralization assays were performed to evaluate the neutralizing capacity of the antibodies produced against one currently circulating BRSV strain (subgroup II). IgG1 levels increase from day 14 for all vaccines, however, serum neutralization tests show positive results from day 14 for parenteral live attenuated vaccines and day 56 for the others. SN antibody titers were higher in attenuated vaccines groups compared to inactivated ones. We aim to isolate a field strain from subgroup VIII during this winter season to perform additional serum neutralization tests using this strain.