Serological survey for RHD antibodies in rabbits from two types of rabbit breeding farms

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Abstract

Seroprevalence studies of RHDV antibodies in domestic rabbits were conducted between 2008-2014. A total of 12,169 sera from the provinces of central, southern and south-east Poland, including 7,570 samples collected from mixed-breed rabbits reared in smallholder farms and nearly 4,600 sera taken mainly from unvaccinated rabbits kept in industrial farms, were examined using ELISA tests. Additionally, cross-reactivity of selected tested and control archival sera using both classic RHDV and RHDVa antigens was determined by HI assay. The overall seroprevalence was 13.3%. In rabbits with unknown history of immunisation or RHD infection which came from small farms, RHDV antibodies were detected in 6.1% ranging between 1.0% to 17.2% of animals. In rabbits of the same group, but with a declared vaccination status, or confirmed exposure to an infectious virus, or coming from exposed females, the seroprevalence ranged from 83% to 100%. Among unvaccinated meat rabbits aged 71 to 90 days from industrial farms, low (1.85%, 4.17%, 11%), medium (34%, 54%) or high rates (98.7%) of seropositivity were detected. The seroconversion recorded in adult vaccinated females from industrial farms was 70% and 95%. Generally, the antibody levels examined by ELISAs and HI were comparable. However, a number of sera from the rabbits from small farms, as well as archival sera, showed clear differences. Several-fold differences in antibody titers, evidenced mainly in the postoutbreak sera, indicted the contact of animals with RHDVa antigen. The overall results of the survey revealed a great proportion of seronegative rabbits potentially highly susceptible to RHD infection. In combination with the emergence of a novel pathogenic RHD virus type (RHDV2), it poses a severe risk of a next wave of fatal disease cases spreading in the native population of domestic rabbits, especially in farms with a traditional system of husbandry.

Key words: RHD, serology, domestic rabbits, industrial farms, smallholder farms

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