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Heterogeneity of Bovine Pestivirus Species and Their Influence on the Serological Response Induced by 10 Commercial Vaccines

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INTRODUCTION

BVDV isolates exhibit significant diversity, characterized by variations in genotype based on nucleotide sequences, antigenic variability, and biotypes. This antigenic diversity not only affects the accuracy of diagnostic tests but also poses challenges for disease control strategies, particularly in vaccine development and deployment.

OBJECTIVE

Evaluate the serological immune response against BVDV-1 and BVDV-2 induced by ten commercial vaccines and the cross-reaction between species of BVDV vaccines and HoBiPev, member of the same family *Flaviviridae*.

MATERIALS AND METHODS

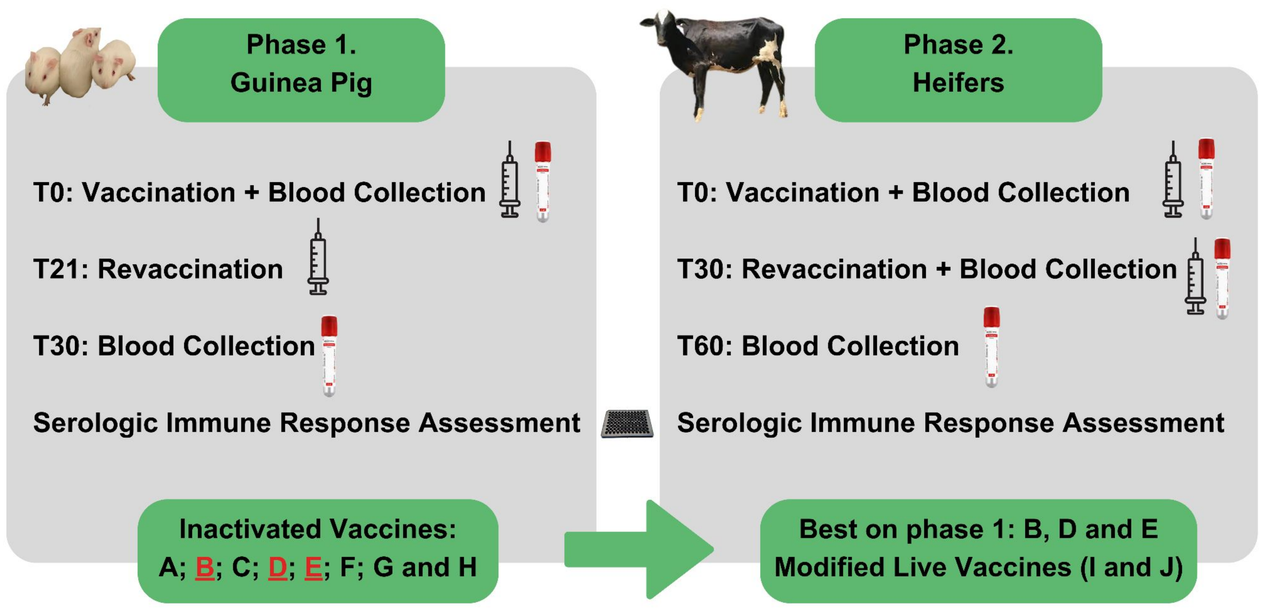
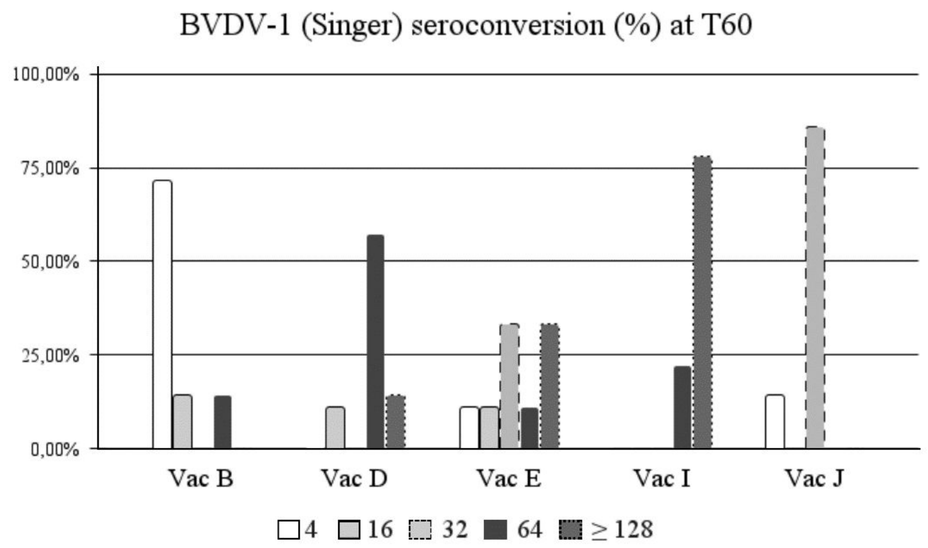


Figure 1. Timeline of 1st and 2nd phase of vaccines inoculation on *Guinea pig* (1) and bovine experiments (2), conducted to evaluate the serological immune response induced by killed vaccines (and recombinant) vs modified-live vaccines.

RESULTS AND DISCUSSION

In the initial study with guinea pigs on the 30th day, only vaccine formulations D and E showed a serological response against BVDV-1. Vaccine D was the only formulation that induced antibody titers against BVDV-2. All vaccine formulations administered to the guinea pigs did not exhibit cross-reactivity against HoBiPeV. The vaccines selected in the guinea pig trial included formulations D and E, along with vaccine B.

During the second phase of the cattle study, various serological responses were observed among non-MLV vaccines. Vaccine E elicited the highest average antibody titers, followed by Vaccines D and B, in that order. MLV Vaccine I exhibited the most significant serological response against BVDV-1. As for BVDV type 2, only Vaccine D prompted the production of neutralizing antibodies. Any vaccine formulations administered showed cross-reactivity against HoBiPeV. The antigenic diversity inherent to pestivirus species poses a challenge to the effectiveness of vaccination programs. Variations in the immune response to different subgenotypes are evident in BVDV vaccine strains. It is clear that the efficacy of commercial vaccines, particularly MLV, and their potential for cross-reactivity against HoBiPeV, require further studies.



CONCLUSION

The immunogenic response to BVDV-1 was either undetectable or minimal in most non-MLV vaccines. The response to BVDV-2 was undetectable for all vaccines, particularly inactivated ones. Findings suggest that vaccines containing only BVDV-1 or a combination of BVDV-1 and BVDV-2 failed to provide adequate virus-neutralizing titers against HoBiPeV strains and insignificant titers for BVDV-2.

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