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Generation of an attenuated *Salmonella* expressing adhesins and toxins of *Pasteurella multocida* and *Bordetella bronchiseptica* for pig progressive atrophic rhinitis and evaluation of its immune responses

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Objective: The Fim A, CP39, PtfA, ToxA and F1P2 antigens associated with pig progressive Atrophic Rhinitis and Pneumonic Pasteurellosis were expressed in an attenuated *Salmonella* delivery system. In addition, the immune responses induced by this delivery strain were investigated in a murine model.

Procedures: Each antigen secreted from the delivery strain was confirmed by Western blot analysis. Thirty BALB/c mice were divided equally into two groups; group A were intra-nasally inoculated with the mixture of the five delivery strains and group B were inoculated with sterile PBS. Serum and vaginal samples were collected at weeks 0, 2, 4, 6 and 8 post-inoculation for assessment of antigen specific serum IgG and vaginal IgA concentrations via an ELISA. In addition, splenocytes were prepared for evaluation of splenic lymphocyte proliferative responses, CD3⁺CD4⁺, CD3⁺CD8⁺ and B-cell populations and the levels of IFN- γ expression at 4 weeks post-inoculation (WPI).

Results: In group A, all antigen-specific serum IgG were significantly increased compared to those of group B from 2WPI till 8 WPI. All antigen-specific IgA in group A were also significantly greater than those of group B. In addition, the significant splenic lymphocyte proliferative responses, the elevations of CD3⁺CD4⁺, CD3⁺CD8⁺ and B-cell populations, and the induction of IFN- γ expression in group A were observed.

Conclusion & Clinical Relevance: Results of this study indicated that the mixture of five delivery strains expressing specific antigen for these diseases was capable of inducing significant humoral and cellular immune responses.

Biography

John Hwa Lee is a professor and Dean at the Chonbuk National University, College of Veterinary Medicine, South Korea. He has a Ph.D. in Veterinary Pathobiology, College of Veterinary Medicine, University of Illinois at Urbana-Champaign, USA. He is an Editorial Board for Food borne Pathogens and Disease and Associate Editor for Journal of Veterinary Science.

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