

## Characterization and cross-protection evaluation of M949\_1603 gene deletion *Riemerella anatipestifer* mutant RA-M1

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*Riemerella anatipestifer* infection causes high mortality for ducks which results in major economic losses in the duck industry. In this study, we identified a mutant strain RAM1 by Tn4351 transposon mutagenesis, in which the M949\_1603 gene encoding glycosyl transferase was inactivated. PCR analysis revealed that M949\_1603 gene is specifically existed in *R. anatipestifer* serotype 1 strains. RAM1 presented no reactivity to the anti-lipopolysaccharide (LPS) MAb in an indirect ELISA. Sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) followed by Western blotting demonstrated that RA-M1 LPS had a deficiency in ladder-like binding pattern to rabbit antiserum against *R. anatipestifer* serotype 1 strain CH3, indicating that the O antigen structure of RA-M1 was changed. RA-M1 showed significant attenuated virulence in ducks and higher sensitivity to normal duck serum, compared with its parent strain CH3. Furthermore, cross-protection of RA-M1 for *R. anatipestifer* serotypes 1, 2, and 10 strains was evaluated. Ducks that received two immunizations with inactivated RA-M1 vaccine were 100 % protected from challenge with *R. anatipestifer* serotype 1 strain WJ4, serotype 2 strain Yb2, and serotype 10 strain HXb2. No changes were observed in the liver, heart, or spleen samples from the protected ducks during autopsy and histological examination. Furthermore, vaccination generated high antibody titers of 1:12,800 against serotypes 1, 2, and 10 strains and enhanced production of interleukin 2 (IL-2) and IL-4 in ducks. These results suggested that M949\_1603 gene is associated with serotype 1 O-antigen biosynthesis, and mutant RA-M1 could be used as a novel cross-protection vaccine candidate to protect ducks against *R. anatipestifer* infection.

### Biography:

Shengqing Yu is the Professor, Head of Department of Veterinary Public Health, Shanghai Veterinary Research Institute, Chinese Academy of Agricultural Sciences. She has done her Ph.D From Totori university Japan with Virus pathogenesis and Immunology as major research interest. She worked as a post doctoral fellow in NIDCD/NIH, USA and Children's hospital Los angeles, USA. She also worked as Research associate and Research assistant from Jiangsu Institute of Poultry science china.