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Production of Coturnix quail immunoglobulins Y (IgYs) against *Vibrio parahaemolyticus* and *Vibrio vulnificus*

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Abstract

Production of chicken immunoglobulins Y (IgYs) and their applications in prophylactic, therapeutic, detection of microbial contaminants and as a diagnostic tool has been widely studied with limited information from other avians. This study produced Coturnix quail (*Coturnix coturnix japonica*) egg yolk IgYs against *Vibrio parahaemolyticus* and *Vibrio vulnificus*. Formalin inactivated (FIVP, FIVV, mixed FI-VP/VV) and heat inactivated (HIVP, HIVV, mixed HI-VP/VV) *Vibrio* immunogens (109 CFU/mL) were intramuscularly immunized into quail through thigh muscles. Egg yolk IgY was purified by water dilution-ammonium sulfate precipitation method and the activity was determined by enzyme-linked immunosorbent assay (ELISA). Formalin inactivated immunogens induced high humoral immune response for both *V. parahaemolyticus* and *V. vulnificus* over heat inactivated immunogens. However, IgYs resulted from HIVP and FIVV immunogens, showed high specificity to *V. parahaemolyticus* and *V. vulnificus* respectively. Detection limits of the indirect ELISA using the produced IgYs were 105 CFU/mL for *V. parahaemolyticus* and 106 CFU/mL for *V. vulnificus*. The developed antibodies showed high binding affinity to their corresponding immunogens, very little cross reactivity to *Staphylococcus aureus* and not other bacteria strains ($p < 0.05$), a phenomenon which was also observed in Western blot.

Keywords

Vibrio parahaemolyticus; *Vibrio vulnificus*; immunoglobulin Y; coturnix quail; enzyme-linked immunosorbent assay (ELISA); immunoblotting