Assessing Active Protection Against S.typhi and S. enteritidis in Mice Immunized with InvH Protein

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Background & Objectives: *Salmonella enteritidis*, is one of the main causes of food-borne illnesses. Epidemic of human infections mediated by *Salmonella enteritidis* was witnessed by last two decades of the 20th century. *Salmonella typhi* causes typhoid fever in humans and has been a major human pathogen for thousands of years. Except for Salmonella arizonae, invH is present in all Salmonella strains. InvH protein can induce antibody production in mice. The effect of immunization with InvH protein on protection against challenge with *S.typhi* and S.enteritidis was the aim of this research.

Methods: BALB/c mice, 4–6 weeks old (16–22 g), were procured from the Razi Institute. Two groups of ten mice each were injected with 10 µg of the recombinant protein per mouse. A mice group injected with 100 µl of PBS served as negative control. To determinate bacterial lethaldose (LD50), S. enteritidis and s.typhi at doses ranging from 3× l04 to 3× l09 CFU/ml were orally and Intraperitoneal respectively administered to mice group. The immunized and control mice were challenged with various doses of *S. enteritidis* and *S.typhi* ranging from 2×108 to 3×1013. Unimmunized mice were challenged with 2×109 of *S.typhi* with (15, 35, 50, 75) µl immunized sera.

Results: LD50 was determined for unprotected and protected mice as 5×108 and 2×1012 respectively by oral route for *S.enteritidis*. LD50 was determined for unprotected and protected mice as 3×108 and 5×1011 respectively by intraperitoneal route for *S.tphi*. Unimmunized mice were challenged with *S.typhi* with immunized sera that shown significant protection compare with and without sera challenge.

Conclusion: Induced active protection by immunization with InvH against variable doses of *Salmonella enteritidis* and *Salmonella typhi* indicate that the immunized mice are completely protected against challenge with 104 LD50 and 103 LD50 respectively.

Keywords: Active Protection; *S. typhi*; *S. enteritidis*; InvH