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Outer Membrane Proteins of Salmonella Typhimurium as an Adjuvant in Rabies Vaccine

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ABSTRACT

Purpose: The objective of the present study was to evaluate the immune-enhancing potential of Salmonella Typhimurium Outer Membrane Proteins and alum as adjuvants towards inactivated Vero cells rabies vaccine (FRV/K2).

Materials and methods: Six groups of female Sprague Dawley albino rats (10 /group) were used in the evaluation of immunogenicity and safety of vaccines and adjuvants. Total IgG, secreted IFN-γ, and the percentage of proliferated CD4+ and CD8+ T-cells were measured. Biochemical analysis and histopathological examination were used to test safety profiles.

Results: OMP adjuvanted rabies vaccine (FRV/K2 +OMP) induced significantly higher neutralizing antibodies on day 21 post-vaccination relative to free (FRV/K2) vaccine and alum adsorbed vaccine (FRV/K2+alum) . (FRV/K2 +OMP) induced a significantly higher level of IFN-γ on day 14 post-vaccination. CD8+ T cells were significantly higher post-vaccination with reference (RV), free (FRV/K2), and (FRV/K2 +OMP) than (FRV/K2+alum). On the contrary, CD4+ T cells were significantly elevated post-vaccination with (FRV/K2+alum) at $P < 0.05$. Biochemical analysis and histopathological examination revealed that OMP could be used safely as an adjuvant for the development of more effective rabies vaccines.

Conclusion: Outer membrane proteins adjuvanted rabies vaccines would be beneficial to induce rapid neutralizing antibodies and essential cytokines. Keywords: Rabies, Outer membrane proteins, Adjuvant, Vaccine, Immune response.

BIOGRAPHY

Iman Negm has worked on some of the recent topics concerning the usage of Salmonella thyphi and other species to identify the potential use for them to be developed as a vaccine. Having gained a course idea in the domain of veterinary sciences and medicine, Iman Negm's research work focuses on identifying suitable solutions for the animals and how medicine can influence their recovery. Currently working at the Egyptian Holding company , along with her colleagues from various universities, Mrs. Negm has completed this project and currently working on similar projects of the same scope.

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