Extraction & Immunological Evaluation of Brucella abortus RB51 Outer Membrane Proteins Combined with Brucella abortus RB51 Live Vaccine

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Background & Objectives: Brucellosis is a zoonosis for human and livestock. *Brucella spp.* is the causes of this disease. Vaccination in Brucellae, which are aerobic and gram negative, has a vital role against these bacteria. Regarding the issues in treatment with antibiotics and the low efficacy of the current vaccines, some of the cellwall subunits of Brucella can be applied, for instance, Outer Membrane Proteins (OMP's) could be considered as potent immunogens in vaccine development. Our aim in this study was to evaluate the immunity of the *Brucella abortus* RB51 OMP combined with the current live vaccine of this strain.

Methods: The *Brucella abortus* OMP's have been extracted by Sodium Deoxycholate detergent Methods of Claussen and 2.5 ml of the extracted OMP's were combined with a 20 ml vial of live RB51 vaccine. Furthermore, the combination was injected to 3 groups of Rabbits, interperitoinally. Group1 with 2.5 µg of OMP's, group 2 with 0.5 ml of live vaccine, and group 3 0.5 µl of the combined vaccine, 3 times every 15 days, respectedly. 15 days after the last injection, the blood was drawn and the serum for each group was separated by centrifugation and evaluated by ELISA, using pure OMP as the fixed antigen.

Results: The data results for ELISA have been analyzed and shown significance the testing groups ($P < 0.05$).

Conclusion: Regarding the results of this study, it could be concluded that, all groups had an acceptable antibody response, however, the injection of sole OMP and sole vaccine had less efficacy on stimulating the humoral immunity, which the injection of combined OMP and live vaccine can raise this. The reason is that, these two components show a synergistic effect and the combination of these two could be considered as a vaccine candidate for brucellosis.

Keywords: Brucella Live Vaccine; Outer Membrane Protein; ELISA