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Efficacy evaluation of an immunogenic peptide derived from the *Lepeophtheirus salmonis* in controlled immunization-challenge experiment in *Salmo salar*

Leal Y¹, Velazquez J¹, García C¹, Takizawa F¹, Sunyer O¹, Purcell S¹, Fast M¹, Estrada MP¹, Carpio Y¹

¹*Center for Genetic Engineering and Biotechnology, Havana, Cuba*

Introduction: Infestations with sea lice (Copepoda, Caligidae) have grown to become the greatest challenge in salmon aquaculture. Treatment-resistant lice, and the necessity to reduce costs and threats to the environment, enhanced the need of developing new methods such as vaccines for parasite control. Until now there are no commercial vaccines available against sea lice. The P0 protein is a structural component of the ribosome of all organisms. Recently, our group demonstrated high vaccine efficacy against the ticks, in rabbits and cows respectively, using a peptide of 20 amino acids derived from the ribosomal protein P0 of *Rhipicephalus sanguineus*.

Methodology: We have identified an immunogenic region of the ribosomal protein P0 from *Lepeophtheirus salmonis* and several vaccine candidates based on this peptide were developed. The chimeric antigens were produced in *E. coli*. Additionally, different Seppic adjuvants were evaluated in tilapia as teleost fish model. Finally, an immunization-challenge experiment under controlled conditions was performed in *Salmo salar* exploring different immunization routes.

Results and Discussion: Purified antigens were able to elicit a high specific IgM antibody response after intraperitoneal immunization in tilapia in the formulation containing the antigen adjuvated in Montanide 50 V2 (W/O). Results in *Salmo salar* demonstrated 27-34 relative percent protection as compared to controls. These results are encouraging for further development of a sea lice vaccine based on an immunogenic peptide derived from the ribosomal protein P0.

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