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Comparative study of two antigens of *Edwardsiella tarda* as DNA vaccine candidates in *Labeo rohita*

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Edwardsiella tarda is an important pathogen of fish globally. This pathogen is also important from a public health point of view, as this is known to produce disease in reptiles, birds, humans and other mammals. In spite of these facts, there is no established successful commercial treatment or preventive measure available. *Labeo rohita* which is not just an Indian major carp but is also an important part of Indian economy is one of the sufferers of Edwardsiellosis. There is a heavy quality loss in *L. rohita* because of this bacterial infection. Our laboratory is working on developing a DNA based vaccine against this pathogen. With this aim in present study we compared vaccine potential of two important antigens of Edwardsiella tarda as DNA construct in *L. rohita* fingerlings. *L. rohita* fingerlings were DNA immunized with recombinant glyceraldehyde-3-phosphate dehydrogenase (GAPDH) and Outer Membrane Protein (OMP-S) genes of *E. tarda*. PCR primers were designed for both the gene using NCBI GenBank sequences. Amplified genes were cloned in eukaryotic expression vector pIRES 6.5 and purified. Two different groups of *L. rohita* fingerlings were immunized with 10 µg of respective DNA construct followed by booster at 14 day post vaccination. At 35th day, both the groups were challenged pathogenic *E. tarda* culture available in our laboratory. Relative percentage survivability, antibody titre, cell mediated immune response and immune gene expression analysis was done. We recorded that RPS was significantly higher in GAPDH group (73%) compared to OMP-S group (62 %). Competitive ELISA test indicated higher antibody titre in OMP-S group than GAPDH group. However nonspecific indicators NBT and phagocytic assay were significantly higher in GAPDH group. iNOS, Ilβ1 and IFNγ gene which are key regulators of immune mechanism were significantly up regulated in GAPDH group compared to OMP-S group. Our study suggested that GAPDH gene can be an ideal candidate for DNA immunization against *E. tarda* in *L. rohita*. But the antibody response generated is higher if we use OMP-S.

Biography

Megha Kadam Bedekar is working as Senior Scientist in Aquatic Animal Health and Management division of ICAR, Central Institute of Fisheries Education, Deemed University located in Mumbai. She is working on developing vaccines against fish pathogens and also on characterizing the immune pathways of fish and shellfish. She is basically a Veterinary graduate, PhD in Animal Biotechnology from Indian Institute of Veterinary Research, India. She is also working as an Editor and Reviewer for many journals.

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