

Role of interferon gamma as immune adjuvant in *Labeo rohita*

Megha Kadam Bedekar, Praveena K Soman, Makesh M, Gayatri Tripathi and K V Rajendran
Central Institute of Fisheries Education (CIFE), India

Economics of fish farming industry is severely affected with problems due to a variety of infectious agents that includes both bacterial and viral pathogens. Immune system of fishes is less developed compared to higher vertebrates. Therefore responsibility of the fisheries scientists is more towards development of better vaccination strategy that can activate both specific and non-specific immune response. Interferon gamma (IFN γ) is the key cytokine which activate inflammatory and Th1 subset of immune response against bacterial and viral diseases. Addressing to the important role of IFN γ we have cloned and studied the effect of rIFN γ on immune system of *Labeo rohita*, which is one of the most economically important fresh water carp in India. 551 bpIFN γ open reading frame of *Labeo rohita* in SSN-1 cell line was cloned and expressed using eukaryotic expression vector system. The SSN-I cell line was transfected and at 24 h and 48 h post-transfection, 18.7 kD AIFN γ protein was expressed in these cells, which was confirmed by Western blot with anti-his antibodies. This IFN γ construct was also transfected in peripheral blood lymphocytes (PBMCs) and checked for expression of four genes IFN γ , iNOS, MX and IL-1 β by real-time PCR. Significantly high expression of all four genes was observed in IFN γ -treated group compared to mock transfected group at 24 h and 48 h time-points in terms of fold increase ($p < 0.05$). IFN γ and iNOS showed the peak expression at 24 h and remained at the same level until 48 h. However, MX and IL-1 β were found to be highly up-regulated at 48 h compared to 24 h. The results showed the conserved function of IFN γ and up-regulation of these genes indicated the role of IFN γ in anti-bacterial, anti-viral and inflammatory responses. The study highlights the candidature of IFN γ as immunoadjuvant along with vaccine against fish pathogens.

Biography

Megha Kadam Bedekar completed Bachelor of Veterinary Science degree in 1999, and secured gold medal for best thesis research work for Master's degree. She completed PhD in Animal Biotechnology from Indian Veterinary Research Institute and joined Animal Biotechnology Centre, Jawaharlal Nehru Veterinary University, Jabalpur India, as Assistant Professor in 2005. In 2011, she got selected as Senior Scientist in Central Institute of Fisheries Education, Mumbai. Her areas of specialization are animal biotechnology, immunology, and microbiology. She developed PCR based diagnosis system and database of Infectious bronchitis virus strains of India and novel vaccine construct against *Mycobacterium avium* paratuberculosis. Currently, she is working on development of bicistronic vaccines against important bacterial diseases of aquatic animals.

megha.bedekar@cife.edu.in