

4th International Conference and Exhibition on Immunology

September 28-30, 2015 Crowne Plaza Houston River Oaks, Houston, TX, USA

Effect of dietary supplementation of *Bacillus subtilis* and *Terribacillus saccharophillus* on the innate immune responses of a tropical freshwater fish, *Labeo rohita*

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Indiscriminate use of antibiotics to prevent and control diseases affecting the health of fish has led to the development and propagation of antibiotic resistant bacteria in the aquatic ecosystems. Amongst the various alternatives proposed, the most widely accepted approach is the use of probiotics to enhance immunity in fish. In this experiment, we have used *Bacillus subtilis* as probiotic bacteria and studied the effect of dietary administration of *B. subtilis* (10^7 cfu /g⁻¹) on the immune and humoral responses of *L. rohita* fed for $30(B_1)$ and $60(B_2)$ days. The results show that serum phagocytic activity significantly increased by $36\%(B_1)$ and $39\%(B_2)$; respiratory burst activity increased by $60\%(B_1)$ and $90\%(B_2)$; Myeloperoxidase activity increased by $26\%(B_1)$ and $71\%(B_2)$; serum IgM levels increased by $46\%(B_1)$ but decreased by $6\%(B_2)$ and serum lectins have increased by $20\%(B_1)$ and $46\%(B_2)$ in fish fed on diet supplemented with *B. subtilis* compared to those fed on normal diets. Similarly haemagglutination (70% and 90% respectively in B_1 and B_2 groups) and haemolytic activity (77% and 98% respectively in B_1 and B_2 groups) also increased significantly in fish fed on *B. subtilis* supplemented diets in B_1 and B_2 groups compared to those fed or the first time from laboratory reared *L. rohita*. It was found that *T. saccharophillus* (107 cfu /g⁻¹) supplemented diet also significantly increased the immune responses, though to a lesser extent, in *L. rohita*. The results suggest that *T. saccharophillus* could also be used as a potent probiont similar to *B. subtilis* and will have potential applications in fish feed formulations and disease prevention.

Biography

V Kalarani has completed her PhD from Sri Venkateswara University, Tirupati, Andhra Pradesh, India and Post-doctoral studies in the University of Calgary, Canada. She is the Head and Chairperson Board of studies of Dept. of Biotechnology, S.P. Mahila Visvavidyalayam. She has published more than 40 papers in reputed journals, guided more than 20 Master's projects and supervising 8 PhD students. She is also serving as an Evaluator / Adjudicator of many research programmes.

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