

Abstract

In this study, we isolated six pathogenic bacteria and four probiotics from unhealthy and healthy *Labeo rohita* (Rahu) fish. We characterized these strains based on their morphological, physiological, and biochemical properties. The pathogenic strains were identified as *Staphylococcus* spp., *Bacillus* spp., *Streptomyces* spp., *Lactobacillus* spp., *Clostridium* spp., and *Bacillus* spp., while the probiotic strains were identified as *Actinobacter* spp., *Clostridium* spp., *Acinetbacter* spp., and *Pseudomonas* spp. The pathogenic strains showed maximum growth at 35°C and pH 6. We evaluated their biofilm-forming abilities using different methods (congo red assay, test tube method and liquid-interface coverslip assay) and found that *Streptomyces* spp., *Bacillus* spp., *Lactobacillus* spp., and *Bacillus* spp. strains exhibited the highest optical density (OD) values at day 5, while *Streptomyces* spp. and *Bacillus* spp. strains showed the highest values at day 7. The probiotics demonstrated antibacterial activity against specific pathogenic strains through cross-streak method, with some showing higher efficiency than the control (Bioflor). In conclusion, this study successfully isolated and characterized biofilm-producing pathogens and probiotics from *Labeo rohita* fish.