

# Isolation and identification of lactic acid bacteria and yeasts with probiotic ability from the intestine of gilthead seabream (*Sparus aurata*)

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## Abstract

Lactic acid bacteria are the most common bacteria used as probiotics in aquaculture. This study aimed to isolate and identify lactic acid bacteria and yeasts with probiotic potential from the intestine of gilthead seabream. Five fish were randomly selected (mean weight: 279.88±17.67 gr) from Nixa Design and Development Farm located in Charak port and 25 fish fries (mean weight: 39.43±9.67 gr) from Tiab Pran Qeshm farm in Qeshm Island. The selected fish had a healthy appearance and were also chosen randomly. Lactic acid bacteria and yeasts were isolated and purified from the intestines of the specimens and identified based on morphological characteristics and molecular sequences. Then these isolates were evaluated based on fundamental probiotic indicators, including acid resistance, bile salts, antagonistic properties, and Haemolytic activity for fish. 12 isolates were purified based on color, shape, and colony size. Then, two yeasts and five bacteria with different morphology were identified using gram staining and microscopic examinations. All lactobacillus isolates had antagonistic properties against the pathogenic bacterium *Vibrio harveyi*. Two strains of yeast; *Rhodotorula mucilaginosa* CBS 316 and *Wickerhamiella infanticola* CBS 7922, were isolated. The lactic acid bacterium isolated from the intestine of the gilthead seabream included two genera of *Enterococcus* and *Bacillus* respectively. The results of probiotic potency tests showed that isolates 1 (bacteria), 3, and 6 (yeast) had the best performance. From the obtained data, it was concluded that the use of a combination of bacteria and yeasts as probiotics in aquaculture has higher efficiency.

**Keywords:** Aquaculture, Probiotic, Bacteria, 16S rDNA, ITS

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