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BOOK OF ABSTRACTS

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Probiotic Properties of *Enterococcus faecalis* Isolated from of Tilapia (*Oreochromis niloticus*) Farm Environment in Ivory Coast

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Abstract

Probiotics have recently gained prominence in aquaculture as environmentally sustainable alternatives to antibiotics, contributing to enhanced fish health and improved zootechnical performance. This study investigated the probiotic properties of twelve lactic acid bacteria (LAB) strains isolated from a tilapia (*Oreochromis niloticus*) farm environment in Ivory Coast, for potential application in aquaponic systems. All isolates demonstrated antagonistic activity against key pathogenic indicator strains, except *Vibrio cholerae*, and displayed varying levels of surface hydrophobicity ($5.50 \pm 0.70\%$ to $22.83 \pm 1.17\%$) and auto-aggregation ($32.50 \pm 0.08\%$ to $52.89 \pm 0.39\%$) after 24 h. DPPH radical-scavenging activity was significantly higher in cell-free supernatants ($\sim 71\text{--}79\%$) than in intact cells ($\sim 30\text{--}33\%$). Bile salt tolerance (0.3% , 4 h) ranged from $2.13 \pm 0.76\%$ to $40.87 \pm 2.12\%$, and survival under simulated gastric conditions (pH 1.5 with pepsin, 3 h) varied from $4.84 \pm 0.26\%$ to $53.98 \pm 13.28\%$. All isolates produced lactic acid, acetic acid, citric acid, malic acid, and propionic acid, and exhibited amylase and cellulase activity; none showed haemolytic activity. Only LAB 1, LAB 10, and LAB 11 demonstrated all three functional properties—probiotic potential. Molecular identification by 16S rDNA sequencing classified LAB 1, LAB 10, and LAB 11 as *Enterococcus faecalis* (GenBank accessions PX518070-PX518072). Genomic analyse revealed no cytolysin operon identification which characterize safety profile these *Enterococcus faecalis* strains. By rationally combining multifunctionalities from LAB1, LAB10, and LAB11, this bacterial consortium can represent a promising One Health candidate for aquaculture product growth and disease control.

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