

Identification and Characterization of *Lactobacillus brevis* P68 with Antifungal, Antioxidant and Probiotic Functional properties.

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ABSTRACT

In the present study *L. pentosus*, *L. plantarum*, *L. fermentum*, *L. brevis*, *L. paraplantarum*, *L. buchneri*, *L. acidipiscis*, which are strains capable of producing antifungal metabolites against food spoilage fungi, were isolated and identified based on 16S rRNA gene sequencing from different traditional pickles. *L. brevis* P68 exhibited significant antifungal activity, and its invitro antioxidant and probiotic properties were investigated. The antifungal compound was characterized based on C13 nuclear magnetic resonance (NMR), ¹H NMR infrared, and mass spectral data. The minimum inhibitory concentration (MIC) of the compounds was assessed using the broth micro dilution technique. The MIC of the compounds against *penicillium chrysogenum* and *P. roqueforti* was 2.5mg/ml and that against *Gibberella moniliformis* and H₂O₂ (1.0Mm) hydroxyl radical and DPPH scavenging activity inhibition rates were 32.76 and 48.63%, respectively, and the activities towards the glutathione peroxidase and superoxide dismutase enzymes were high. This strain tolerated low pH and bile salt, exhibited bile salt hydrolase and extra cellular enzyme activities and was sensitive to common antibiotics with high hydrophobicity. This study revealed that the antifungal, antioxidant and probiotic properties of *L. brevis* P68 confirmed its application to the food industry.