

Preparation and Functional Properties of Synbiotic Yogurt Fermented with *Lactobacillus brevis* PML1 Derived from a Fermented Cereal-Dairy Product

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Abstract : Nowadays, production of functional foods has become very essential. Inulin is one of the most functional hydrocolloid compounds used in such products. In the present study, the production of a synbiotic yogurt containing 1, 2.5, and 5% (w/v) inulin has been investigated. The yogurt was fermented with *Lactobacillus brevis* PML1 derived from Tarkhineh, an Iranian cereal-dairy fermented food. Furthermore, the physicochemical properties, antioxidant activity, sensory attributes, and microbial viability properties were investigated on the 0th, 7th, and 14th days of storage after fermentation. The viable cells of *L. brevis* PML1 reached 10⁸ CFU/g, and the product resisted to simulated digestive juices. Moreover, the synbiotic yogurt impressively increased the production of antimicrobial compounds and had the most profound antimicrobial effect on *S. typhimurium*. The physicochemical properties were in the normal range, and the fat content of the synbiotic yogurt was reduced remarkably. The antioxidant capacity of the fermented yogurt was significantly increased ($p < 0.05$), which was equal to those of DPPH (69:18±1:00%) and BHA (89:16±2:00%). The viability of *L. brevis* PML1 was increased during storage. Sensory analysis showed that there were significant differences in terms of the impressive parameters between the samples and the control ($p < 0.05$). Addition of 2.5% inulin not only improved the physical properties but also retained the viability of the probiotic after 14 days of storage, in addition to the viability of *L. brevis* with a viability count above 6 log CFU/g in the yogurt. Therefore, a novel synbiotic product containing *L. brevis* PML1, which can exert the desired properties, can be used as a suitable carrier for the delivery of the probiotic strain, exerting its beneficial health effects.

Keywords : functional food, *Lactobacillus brevis*, synbiotic yogurt, physicochemical properties

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