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Effect of Yogurt Bacteria and Probiotics on Melatonin Content and Antioxidant Activity of Chickpea Yogurt

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Abstract : Chickpea yogurt, a distinct dairy-free alternative, has gained popularity as a nutritious and promising future food product. Chickpea is considered as alternative protein sources because of its high protein content, suitable chemical composition for the growth of lactic acid bacteria, and antioxidant properties. Therefore, this study determined the impact of the co-culture of yogurt bacteria with probiotics on the melatonin content, antioxidant properties, and quality characteristics of chickpea yogurt compared with traditional dairy yogurt. Chickpea yogurt was prepared using four different combinations of yogurt bacteria and probiotics including (1) Lactobacillus bulgaricus and Streptococcus thermophilus (CP-YC; control), (2) Bifidobacterium lactis, L. acidophilus, L.bulgaricus and S.thermophilus (CP-BY) (3) B.lactis, L.acidophilus and S. thermophilus (CP-BT) and (4) L. acidophilus, L. bulgaricus and S. thermophiles (CP-LA). The highest content of melatonin and tryptophan (2.05 and 711.85 ng/g dry weight, respectively) were observed in the CP-BT and CP-LA. Moreover, chickpea yogurt fermented by CP-BY exhibited a strong antioxidant activity evaluated by DPPH and ABTS assay while the CP-LA was high in FRAP assay. The pH of all treatments was decreased while the content of lactic acid was increased with fermentation time (8 h). The syneresis (%), color values (L*, a*, b*), and texture profile analysis of all treatments were significantly affected by bacteria yogurt. This study suggests that chickpea yogurt fermented by bacteria yogurt mixed with probiotics has potential for enhancing melatonin content and antioxidant activity. However, future research is required to investigate yogurt's sensory attributes, microbial stability, and shelf life.

Keywords : antioxidants, dairy-free alternative, health benefits, plant-based protein, tryptophan.
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