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Techno-functional properties of yoghurts fortified with walnut and flaxseed oil emulsions in guar gum

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Abstract

The present study aimed at fortification of yoghurt with walnut and flaxseed oils using guar gum. Both the oils were added separately at a concentration of 2% along with two different concentrations of guar gum (0.025% and 0.05%). Fortified yoghurt samples were studied for functional, rheological, microbial and antioxidant properties. Fatty acid profile and oxidative shelf-life of the product was also determined. The addition of oil increased syneresis, antioxidant activity and malondialdehyde formation in yoghurts while the microbial count decreased. Gum addition, significantly ($P<0.05$) decreased pH, syneresis, and increased the oxidative stability, antioxidant activity of yoghurt samples while no significant ($P>0.05$) effect on microbial content was seen. All yoghurt samples showed pseudo plastic flow behavior with yield stress that increased with increase in gum and oil concentration. Gum and oil addition increased G′, G″, and composite viscosity of yoghurt samples. Walnut fortified yoghurt samples showed significantly ($P<0.05$) higher MUFA and PUFA levels among all the samples. Walnut oil fortification showed higher sensory parameters and superior overall quality characteristics than flaxseed oil fortification. Hence, walnut oil is a better option for fortification of yoghurts with essential fatty acids than flaxseed oil.

Keywords: Fortified yoghurt; GC-MS; rheology; microbial analysis; sensory analysis

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1. Introduction

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