Quality and storage stability of cream cheese enriched with microencapsulated rosemary extract

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Abstract
Polyphenolic compounds derived from rosemary (Rosmarinus officinalis L.) have numerous biological effects, including antioxidant and antimicrobial ones. However, their application is limited because they degrade under different environmental conditions. Consequently, rosemary extract was microencapsulated in alginate using the drop technique to alleviate this problem. Research results showed that rosemary extract has a high total polyphenolic content (38.63±0.29 mg GAE/g DW), especially methyl-rosmarinate, rosmarinic acid, cirsimarin, carnosol, epigallocatechin, rosmadial. The extract shows important antioxidant activity - 1216.46±2.42 mM Trolox/g DW and inhibitory effect against strains of Staphylococcus aureus, Geobacillus stearothermophilus, Bacillus cereus, Candida albicans, Enterococcus faecalis, Escherichia coli and Salmonella Abony. Microencapsulated rosemary extract was characterized by: moisture - 6.21±0.05%, swelling index - 85.5±0.1% and solubility - 22.5±0.4%. The encapsulation efficiency of microencapsulated rosemary extract was 81.0±0.3%, demonstrating minimal losses of polyphenolic compounds. Microencapsulated rosemary extract was used to enriched cream cheese. In this study, the sensory, physicochemical and textural properties of cream cheese were evaluated during the storage period of 28 days at 4°C. It was determined that the addition of 0.6-0.9% microencapsulated rosemary extract in cream cheese inhibited the post-fermentation process, improved the degree of water retention and textural parameters of cream cheese, thus prolonging it's shelf life by 7 days compared to plain cream cheese. Microcapsules based on alginate ensured the stability of the bioactive compounds of the rosemary extract and led to the controlled release of the polyphenolic compounds from the cream cheese during the storage period.

Keywords: Eosemary; Microencapsulation; Antioxidant activity, Polyphenolic compounds, Antimicrobial activity, Cream cheese.

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