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# Effect of Microencapsulated Basil Extract on Cream Cheese Quality and Stability

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**Abstract:** The antimicrobial and antioxidant effects of plant extracts are well known, but their use is limited because they affect the physicochemical and sensory characteristics of products. Encapsulation presents an option to limit or prevent these changes. The paper presents the composition of individual polyphenols (HPLC–DAD-ESI-MS) from basil (*Ocimum basilicum* L.) extracts (BE), and their antioxidant activity and inhibitory effects against strains of *Staphylococcus aureus*, *Geobacillus stearothermophilus*, *Bacillus cereus*, *Candida albicans*, *Enterococcus faecalis*, *Escherichia coli*, and *Salmonella Abony*. The BE was encapsulated in sodium alginate (Alg) using the drop technique. The encapsulation efficiency of microencapsulated basil extract (MBE) was 78.59 ± 0.01%. SEM and FTIR analyses demonstrated the morphological aspect of the microcapsules and the existence of weak physical interactions between the components. Sensory, physicochemical and textural properties of MBE-fortified cream cheese were evaluated over a 28-day storage time at 4 °C. In the optimal concentration range of 0.6–0.9% (*w*/*w*) MBE, we determined the inhibition of the post-fermentation process and the improvement in the degree of water retention. This led to the improvement of the textural parameters of the cream cheese, contributing to the extension of the shelf life of the product by 7 days.

**Keywords:** microencapsulated basil extract; antimicrobial activity; cream cheese; quality; shelf life



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## 1. Introduction

A growing demand for safe, natural, and synthetic preservative-free food products leads researchers to develop new alternatives and sustainable approaches for food preservation [1]. Cheeses are dairy products widely consumed throughout the world as part of a regular diet, and are valued for their high content of proteins, fats, mineral (especially calcium), and vitamins [2]. Cream cheese is a fresh soft cheese used as an ingredient in many food applications [3]. Due to the high moisture content and a favorable pH, cream cheese is considered an optimal environment for the growth of pathogenic and spoilage microorganisms [4]. The addition of preservatives is one of the most used methods of ensuring the antimicrobial stability of cheeses [5]. Effective replacement of preservatives (e.g., sorbates, nitrites, etc.) is the focus of various recently reviewed studies [6]. Phenolic extracts from aromatic plants have attracted the attention of the scientific community regarding their safety as natural ingredients as well as their wide application in the food industry [5,7,8]. Basil extract is characterized by high antioxidant and antimicrobial activity [9,10], contributing to reducing the population of pathogenic microorganisms and to

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**Sample Availability:** Not available.

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