TITLE: EVALUATION OF ANTIFUNGAL ACTIVITY OF NANOEMULSIONS ENCAPSULATING OREGANO ESSENTIAL OIL AND CASE STUDY IN MINAS PADRÃO CHEESE.

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Abstract:

Minas Padrão cheese is a produced and consumed in Brazil, and as a matured product it is exposed to the environment for long periods of time. This fact makes it susceptible to contamination by pathogenic fungi, affecting its final quality and can pose a risk to the consumer. The known antimicrobial effect of oregano essential oil makes it an alternative in food preservation. However, this product presents some technological disadvantages, such as the possibility of causing unpleasant sensory effects to the consumer. The nanoencapsulation is a technological possibility to enable the use of essential oils in food preservation because it allows producing highly stable during storage systems without affecting the inhibitory effect of essential oil. The aim this study was to evaluate the oregano essential oil nanoencapsulated potential as an antifungal agent in Minas Padrão cheese. To evaluate the antifungal activity of the oregano essential oil were produced nanoemulsions containing oregano essential oil using the phase inversion temperature method (PIT method). The genera of fungi *Cladosporium* sp., *Fusarium* sp. and *Penicillium* sp. were isolated of commercial samples of Minas Padrão cheese. Both minimum inhibitory concentration (MIC) of pure and encapsulated oregano oil antifungal activity were determined in Minas Padrão cheese. The genus *Penicillium* sp. was the least susceptible to the antifungal effect of the oregano essential oil. In the Minas Padrão cheese slices, he inhibitory effect of nanoencapsulated oregano oil evaluated and it depended on the immersion time of the cheese slices in the nanoemulsions and on the storage temperature. It was concluded that the nanoencapsulated oregano essential oil showed potential inhibitory effect on the genera of fungi assessed and can be a good alternative as a preservative the type of cheese studied.

Key words: Nanoemulsions; phase inversion temperature; oregano essential oil; fungal growth inhibition

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