Abstract

The objective of this study was to evaluate the effect of rosemary essential oil encapsulation using whey protein isolate (WPI) and inulin as encapsulation matrix on the shelf-life extension of Minas frescal cheese. Essential oil in bulk and microencapsulated forms were added to cheese at concentrations of 0.5% and compared with control treatment (cheese without rosemary essential oil). The aerobic mesophilic microorganism counting cheese with added microencapsulated rosemary essential oil was lesser than that in cheese subjected to other treatments, thus implying that microencapsulated oil has antimicrobial effects. Microencapsulated rosemary essential oil enabled a microbial reduction of 1.36 log cycles after 3 days of storage and 0.73 log cycles after 15 days of storage compared to the control treatment. The microencapsulation process did not alter the chemical composition of the rosemary essential oil and was effective in controlling the acidity of the cheese. Therefore, rosemary essential oil can be used as a potential biopreservative in cheese.

Practical Applications

Microencapsulation by spray-drying process maintained the original profile of the bulk rosemary essential oil and the drying process did not alter the oil chemical profile; thus, microencapsulated oil is emerging as a useful alternative for application in the food industry. Essential oil in bulk and microencapsulated forms were added to cheese at concentrations of 0.5% and compared with control treatment (cheese without rosemary essential oil). Microencapsulated rosemary essential oil was able to control the proliferation of mesophilic bacteria in Minas frescal cheese, promoting a delay in the microorganism growth during storage, thereby extending the product shelf life. Thus, the findings of our study show that microencapsulated rosemary essential oil can be used as a potential biopreservative in Minas frescal cheese.