Abstract

The effects of clove (Syzygium aromaticum) and marjoram (Origanum majorana L.) essential oils on color stability, lipid oxidation, sensorial properties and microbiological quality of beef burger prepared with sunflower oil during frozen storage at −18°C for 3 months were investigated. The burger was formulated with clove and marjoram essential oils at 250 and 500 mg/kg. Patties formulated with marjoram essential oil showed significantly lower pH values, aerobic plate counts and psychrotrophic counts. Results indicated that marjoram and clove essential oils had a powerful antioxidant activity. Since, malondialdehyde content did not exceed 0.5 mg/kg patty after 3 months of frozen storage. No significant variations in taste and odor scores between control samples and those formulated with clove oil or marjoram oil at 250 mg/kg over different months of frozen storage were noticed. The investigated essential oils had a protective effect on color properties of the burger samples.

Practical Applications

Antimicrobial and antioxidant activities of essential oils are well-known. We hypothesized that formulating beef patties with the addition of sunflower oil would increase unsaturated fatty acids and nutritional value. This work demonstrates that marjoram essential oil could be used at 500 ppm to preserve the fresh-like quality of frozen beef patties.