Introduction

Whey, with its high content of protein, lactose, fat and some vitamins and minerals, is a very valuable by-product of cheese in making. Lor cheese is produced from whey by boiling; heat sensitive proteins like α-lactalbumin and β-lactoglobulin are denatured. In Turkey, Lor cheese has relatively high moisture and pH that led to a rapid microbial decomposition thus, has very short shelf-life. Application of CO2 in dairy foods has been known to inhibit spoilage microorganisms and extents the shelf life of high moisture dairy foods.

Aim

The aim of this study was to extend the shelf life and improve the quality of Lor cheese with CO2 application.

Methods

Whey was well mixed with 44 mM CO2 under 4-5 bar pressure in stainless steel tank. Then, heat treatment was applied at boiling temperature until the curd was formed. Curd was taken and pressed with cheese cloth. Control group was also included without CO2 application. Whey cheeses were packaged with polypropylene trays and stored at 4 °C. Samples were analyzed microbiologically, chemically, and by a sensory analysis after 1, 4, 7, 10, 14 days of storage. Color of Lor cheese samples were also evaluated instrumentally during storage.

Results

The pH values of CO2 applied Lor cheese were lower than control samples. CO2 applied Lor cheese had 1 log cfu/g difference in total bacteria counts than control samples. CO2 application was not effective on Lactobacilli spp. Pseudomonas spp., and yeast and mold counts. However, lipid oxidation and peroxide values were lower in CO2 applied Lor cheese samples than that of control groups. Whiteness index of CO2 applied Lor cheese had higher than control samples. CO2 application provided better sensory scores in compare to controls.

Conclusion

CO2 application provided longer shelf life for Lor cheese stored at 4 °C.