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Microbiological and physicochemical changes in Turkish fermented sausages (Sucuk) coated with chitosan-essential oils

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Mold growth on the surface of Turkish fermented sausages during processing is a manufacturing practice defect and changes in relative humidity and temperature of ripening rooms can allow this problem. The aim of this study was to investigate the effect of dipping into chitosan (C)-essential oil (thyme (T) and rosemary (R)) solutions on the surface mold growth, the internal microbial population and physicochemical properties of Turkish fermented sausages (sucuk) during processing for 12 days. The sausages were dipped into different solutions at the 4th day of fermentation and six different treatments were obtained: control (distilled water), 20% potassium sorbate (PS), 1% acetic acid (AA as a chitosan solver), 1%C, 1%C+1%T (CT), 1%C+1%R (CR). Chitosan and essential oil treatment resulted in significant inhibition of surface mold growth on the sausages after dipping at day 4. PS and CR had the lowest mold count at the end of processing. The internal microbial population did not significantly affect by C or CT and CR applications. Lactic acid bacteria, dominant microflora of fermented sausages, were lower in C, CT and CR sausages than control and AA sausages. However, LAB counts of these sausages were between 8.68-8.93 log CFU/g at the end of processing, indicating no negative effect on fermentation and ripening. The sausages with C, CT and CR and control had higher moisture, aw and low pH values than PS and AA sausages. Dramatic mold growth on the control sausages caused the higher moisture and aw at the end of processing. Neither CT nor CR did not significantly affect the sensory properties but increased the taste and odor scores. The results indicated that the combination of chitosan and thyme or rosemary essential oils inhibit the surface mold growth and improves the stability and safety of the product.

Biography

Eda Demirok Soncu graduated from Ankara University, Faculty of Engineering, and Department of Food Engineering in 2007. In the same year, she applied for PhD degree. During her PhD, she worked as a visiting student at Texas A&M University, Department of Poultry Science from 2011-2012. In 2014, she completed her PhD degree from Ankara University, Department of Food Engineering. The subject of her thesis was investigation of acrylamide in further processed chicken products during frying. She has been still working at the same department as a Research Assistant. From 2007 to date, she has been participated in nine projects. She has nine international and four national scientific papers. Additionally, she has presented many presentations in 20 international and national scientific meetings. Her academic research area is Meat Science and Technology, Poultry Science, Food Safety, Food Quality and Nutrition.

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