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Proteolytic, lipolytic and microbiological changes in dry-fermented chicken sausages throughout the fermentation and drying process

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The purpose of the current study was to determine the microbiological, proteolytic, and lipolytic changes in dry-fermented chicken sausages throughout the production process. The sausage dough was produced from skin-on chicken thigh meat, chicken skin, and following ingredients: salt (1.5%), garlic (2%), hot red pepper (0.5%), sweet red pepper (2%), cumin (1%), pimento (0.3%), black pepper (0.4%), saccharose (0.3%), sodium nitrite (0.01%), starter culture (0.05%). Upon kneading, the dough was stuffed into collagen casings in pieces of 150 g. Then, sausages were hang on and allowed to fermentation (3 days) and drying (11 days) process under controlled temperature and humidity conditions. The experiment was repeated three times. Total mesophilic aerobic bacteria (TMAB), lactic acid bacteria (LAB), *Micrococcaceae*, total yeast and mold counts, proximate composition, the changes in color, pH, TBARS (Thiobarbituric acid reactive substances), -SH groups, and sensory properties were determined during 14 days of production. The moisture, protein, fat and ash content of final product were 32.48%, 30.79%, 29.67%, and 4.70% respectively. The pH value decreased from 6.24 to 4.66 at day 4 due to acidification activity of LAB ($p < 0.05$). The initial counts of LAB, TMAB, *Micrococcaceae*, total yeast and mold were 2.47, 4.93, 1.63, and 2.50 log CFU/g, respectively. These values significantly increased during fermentation and reached to 9.29, 9.30, 6.58, and 5.24 log CFU/g, respectively. While LAB, TMAB, *Micrococcaceae* counts were stable during drying, total yeast and mold counts decreased ($p < 0.05$). Darker and more redness color was measured during drying process ($p < 0.05$). Regarding TBARS value, an indicator of lipolytic changes, a slight increase was determined during fermentation, but that value significantly raised from 0.71 to 3.32 mg MA/kg during drying ($p < 0.05$). Alterations in proteins were measured by the loss of -SH groups during production. In the sensory panel, sausages were evaluated as having a darker color, soft texture, acidic taste and flavor.

Biography

Eda Demirok Soncu graduated from Ankara University, Faculty of Engineering, Department of Food Engineering in 2007. In the same year, she applied for PhD candidate. During PhD, she worked as a visiting student at Texas A&M University, Poultry Science Department between 2011 and 2012. In 2014, she graduated from Ankara University, Department of Food Engineering and got PhD degree. 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 Dr. Research Assistant. From 2007 to date, she has participated in 9 projects. She has 9 international and 4 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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