

Pale, Soft, Exudative (PSE) Turkey Meat in a Brazilian Commercial Processing Plant

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Abstract : Over the past decade, the Brazilian production of turkey meat increased by more than 50%, indicating that the turkey meat is considered a great potential for the Brazilian economy contributing to the growth of agribusiness at the marketing international scenario. However, significant color changes may occur during its processing leading to the pale, soft and exudative (PSE) appearance on the surface of breast meat due to the low water holding capacity (WHC). Changes in PSE meat functional properties occur due to the myofibrils proteins denaturation caused by a rapid postmortem glycolysis resulting in a rapid pH decline while the carcass temperature is still warm. The aim of this study was to analyze the physical, chemical and histological characteristics of PSE turkey meat obtained from a Brazilian commercial processing plant. The turkey breasts samples were collected (n=64) at the processing line and classified as PSE at $L^* \geq 53$ value. The pH was also analyzed after L^* measurement. In sequence, PSE meat samples were evaluated for WHC, cooking loss (CL), shear force (SF), myofibril fragmentation index (MFI), protein denaturation (PD) and histological evaluation. The abnormal color samples presented lower pH values, 16% lower fiber diameter, 11% lower SF and 2% lower WHC than those classified as normal. The CL, PD and MFI were, respectively, 9%, 18% and 4% higher in PSE samples. The Pearson correlation between the L^* values and CL, PD and MFI was positive, while that SF and pH values presented negative correlation. Under light microscopy, a shrinking of PSE muscle cell diameter was approximately 16% shorter in relation to normal samples and an extracellular enlargement of endomysium and perimysium sheaths as the consequence of higher water contents lost as observed previously by lower WHC values. Thus, the results showed that PSE turkey breast meat presented significant changes in their physical, chemical and histological characteristics that may impair its functional properties.

Keywords : functional properties, histological evaluation, meat quality, PSE

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