

## **Skeletal muscle proteome and meat quality of broiler chickens subjected to gas stunning prior slaughter or slaughtered without stunning**

### **ABSTRACT**

The study examined the effects of pre-slaughter gas stunning and slaughter without stunning on meat quality and skeletal muscle proteome of broiler chickens. Fifty Cobb broiler chickens were randomly assigned to either a neck cut without pre-slaughter stunning (Halal slaughter) or pre-slaughter gas stunning followed by a neck cut. Samples of Pectoralis major muscle at 7 min, 4 h and 24 h postmortem were analyzed for pH, shear force, color, drip and cooking losses. Proteome profile of the 7 min samples was examined by two-dimensional polyacrylamide gel electrophoresis. Birds subjected to Halal slaughter had higher ( $P < 0.05$ ) redness than those gas stunned at 4 and 24 h postmortem. Gas-stunned birds had lower ( $P < 0.05$ ) muscle pH and shear force and higher ( $P < 0.05$ ) drip and cooking losses compared with those subjected to Halal slaughter throughout postmortem storage. Gas stunning up-regulated ( $P < 0.05$ ) the expression of beta-enolase, pyruvate kinase and creatine kinase compared with Halal slaughter. Results indicate that pre-slaughter gas stunning hastened postmortem energy metabolism and had detrimental effects on the water holding capacity and redness of broiler breast muscles.

**Keyword:** Gas stunning; Halal slaughter; Meat quality; Proteomics