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ABSTRACT

EFFECT OF ALTERNATING AND DIRECT ELECTRICAL CURRENTS AND VARIOUS STUNNING FREQUENCIES ON ANIMAL WELFARE, CARCASS DEFECTS AND MEAT QUALITY OF BROILERS

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The objective of this study was to determine the effects of pre-slaughtering electrical stunning on poultry welfare, carcass defects and meat quality characteristics of broilers. Two trials were conducted to study the effect of pre-slaughtering electrical stunning on welfare of chickens in poultry plant of the university (trial 1) and meat quality characteristics of broilers under commercial condition in poultry slaughterhouse (trial 2). In each trial, 180 broiler chickens were used. Birds were divided into 9 groups (Control, 4 AC and 4 DC treatment groups). Chickens were stunned using various frequencies (50, 200, 400 and 1000 Hz) of electrical currents of 120 mA (sinus AC and pulsed square DC) in water bath in during 4 s. Then, reflexes of chickens, respiratory arrest and fibrillations were determined at pre-slaughtering period. At post- slaughtering, blood losses of chickens, carcass defects on carcasses and pH (pH_{15} and pH_{24}), color, texture, drip losses and cooking losses on breast meat of chickens were measured.

Frequency levels of 50 and 200 Hz of AC current showed more positive effect on poultry welfare. At all frequency groups of AC, hemorrhages and spots were higher than DC. Electrical stunning reduced drip loss of breast meat. But the effect of electrical stunning was not significant on the other meat quality characteristics.

As a result, using of low frequencies (50 and 200 Hz) of AC of 120 mA for pre-slaughtering electrical stunning of broiler chickens revealed more positive impacts on poultry welfare, carcass defects and meat quality of broiler.

Key words: Broiler, electrical stunning, poultry welfare, carcass defects, meat