

Assessment of efficacy of electrical water bath stunning on meat quality and welfare of broiler chickens

M.W.R.C. Premasiri^{1*}, R.M.A.S. Bandara², M.H.D. Kavinda¹, S.M.A.N.S. Senanayake¹ and T.S. Samarakone¹

¹Department of Animal Science, Faculty of Agriculture, University of Peradeniya, Sri Lanka

²Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka

Abstract

Stunning prior to slaughtering is practiced to minimize pain and suffering of farm animals. The aim of the study was to assess two electrical parameters to obtain an efficient water bath stunning in broiler chickens. In this study two different electrical parameters (high intensity and high voltage current: 400 mA-600 mA and 40 V, low intensity and low voltage current 200 mA-400 mA and 20 V-25 V) with a constant frequency (280 Hz-300 Hz) were assessed to detect the efficacy of water bath stunning and meat quality of broiler chickens (Live body wt: 2.0±0.2 kg, 35±2 days old). Initially pre slaughter stress was detected using a panting scoring system and assessing wing flapping frequency. Efficacy of stunning of the birds was assessed observing behaviors and reflexes just after applying the electric current at the water bath and just before the neck cutting of the birds. After the neck cutting, reflexes and behaviors were assessed to find out time at brain death. Carcass quality was assessed based on the degree of external damage (blood spots, hemorrhages, broken bones). Statistical analysis was done by using SAS 9.4 software. There was no difference ($P>0.05$) in pre-stunning stress between the two treatment groups. None of the bird exhibited eye blinking, head shaking, look around and neck muscle tone just after stunning and just before neck cutting for the high electrical parameters. However, nearly 4% of birds showed these reflexes and behaviours for the low electrical parameters indicating lower stunning efficacy. Mean time to loss of reflexes and behaviours after neck cut indicated faster death in stunned birds than in the conscious birds. Carcass quality assessment revealed that higher number of birds stunned with high electric parameters had blood spots in wings and hemorrhages in the breast ($P<0.05$). The electrical parameters did not affect on color values and water holding capacity of the carcasses. In overall, results revealed that the high electrical parameters were more efficient in water bath stunning to achieve humane slaughtering. However, the high electric parameters comparatively reduced the meat quality of broiler chickens.

Keywords: Carcass quality, Electrical water bath stunning, Reflexes, Meat quality, Pre-stunning stress

*Corresponding Author: rumeshpremasiri@gmail.com