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Malaysian Applied Biology
Volume 46, Issue 4, December 2017, Pages 103-109Different slaughtering techniques and possible physiological and biomolecular effects (Article)Zaman, R.¹, Shahdan, I.A.², Idris, S.Z.³, Abdurazak, N.B.⁴, Rahman, M.T.⁵ ¹Faculty of Science, International Islamic University Malaysia (IIUM), Jalan Istana, Bandar Indera Mahkota, Kuantan, Malaysia²Faculty of Allied Health Sciences, IIUM, Jalan Istana, Bandar Indera Mahkota, Kuantan, Malaysia³Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Abstract

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The aim of the study was to identify possible physiological and biomolecular changes during slaughtering. For slaughtering, before the neck cutting, chickens are immobilized manually or immobilized using shackles. Neck cutting is generally performed using automated knife, often results in decapitation. Both of these immobilization and neck cutting conditions are expected to influence muscle contraction and blood loss. We have investigated the activity and transcription of acetylcholinesterase (AChE) which terminates cholinergic synaptic transmission by hydrolysing the neurotransmitter acetylcholine that is responsible for muscle contraction and relaxation. We have also analysed the residual haemoglobin content of the skeletal muscle as indicator of blood loss. Skeletal muscle sample was collected from the chickens that were slaughtered either by decapitation (C) or by severance of the jugular veins, carotid arteries, oesophagus and trachea only (P₂) whilst immediately after slaughtering, chickens were either released (R) or manually constrained (T). Differences in the conditions of slaughtering: CR, PR or PT did not affect blood loss as measured by the residual Hb content and the amount of Zn and Fe either in muscle or liver, deducing no significant difference ($p > 0.05$) in blood loss due to different type of slaughtering. No significant differences ($p > 0.05$) were observed in AChE activity in muscles taken from all slaughter groups. However, AChE transcripts were detected in muscles from chickens from PT and CR groups which might be due to the decapitation and/or constrained muscular activity after neck cutting. Hence the results of the current study indicate that, constraining during slaughtering and decapitation might induce stress to the animals. © 2018, Malaysian Society of Applied Biology. All rights reserved.

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Author keywords

[Acetylcholine](#) [Central nervous system](#) [Haemoglobin](#) [Motor neuron](#) [Neuromuscular junction](#) [Stress](#)

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