

Title Effect of heat treatment on changes in texture, structure and properties of Thai indigenous chicken muscle

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Abstract

Changes in texture, microstructure, colour and protein solubility of Thai indigenous and broiler chicken *Pectoralis* muscle stripes cooked at different temperatures were evaluated. The change in shear value of both chicken muscles was a significant increase from 50 to 80 °C but no change from 80 to 100 °C. A significant decrease in fibre diameter was obtained in samples heated to an internal temperature of 60 °C and the greatest shrinkage of sarcomeres was observed with internal temperatures of 70–100 and 80–100 °C for broiler and indigenous chicken muscles, respectively ($P < 0.05$). Cooking losses of indigenous chicken muscles increased markedly in the temperature range 80–100 °C and were significantly higher than those of the broiler ($P < 0.001$). With increasing temperature, from 50 to 70 °C, cooked chicken muscle became lighter and yellower. Relationships between changes in sarcomere length, fibre diameter, shear value, cooking loss and solubility of muscle proteins were evaluated. It was found that the solubility of muscle protein was very highly correlated with the texture of cooked broiler muscle while sarcomere length changes and collagen solubility were important factors influencing the cooking loss and texture of cooked indigenous chicken muscle.