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Fatty Acid and Amino Acid Profiles of Breast and Thigh Muscle of Bresse and Black-Boned (Cheefah and Fahluang) Chickens Raised in North Thailand

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Abstract

Consumers in Thailand have a high preference for Black-boned chicken meat and are willing to pay a premium price on the market. This “good” taste is attributed to the high glutamic acid content in the meat. The current study was set up to compare the fatty acid and amino acid profiles in Bresse (Bre) and Black-bone (Cheefah; Che and Fahluang; Fah) chickens. Eighty chicks (40 males and 40 females) for each strain were selected for the study. Within strain and sex the chicks were randomly divided into eight groups of five chicks each and used in a completely randomised design with a 3×2 factorial combination of treatments. The chicks were fed a common diet and slaughtered at 16 weeks of age. Breast (*Pectoralis major*) and thigh (*Biceps femoris*) muscles were collected for the assessment of fatty acid and amino acid composition. The ratios of unsaturated to saturated fatty acid (UFA:SFA) and polyenic fatty acid to saturated fatty acid (P:S) in breast and thigh muscles of Bre were significantly ($p < 0.01$) higher than Che and Fah chickens. Within strain, the UFA:SFA and P:S ratios were significantly ($p < 0.01$) higher in males than females. The breast muscle of Bre chickens tended to have lower glutamic acid content compared to Che and Fah. The thigh muscle glutamic acid content of Fah was significantly ($p < 0.001$) higher to Bre and Che chickens. There were no significant ($p > 0.05$) interactions. Therefore, although the Bre chickens had a better fatty acid composition, the meat taste could be negatively affected by the lower glutamic acid content relative to that of the Black-boned chickens (Fah and Che). From this perspective, the black-boned chickens (Fah and Che) have potential to meet the consumers’ taste preference.

Keywords: Amino acid, black-boned chicken, bresse, fatty acid