

Proteomic Analysis of Tenderness Trait in Thai Native and Commercial Broiler Chicken Muscles

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Abstract :

The objective of this study was to identify protein markers for tenderness trait of Thai native and commercial broiler chicken muscles. The proteome of chicken muscle with high and low-shear force values was analyzed by two-dimensional gel electrophoresis and MALDI-TOF/MS technique. A total of 169 and 158 protein spots were observed in Thai native and commercial broiler chicken muscles, respectively. Of these proteins, five protein spots were up and down-regulated with low shear force values of chicken meat. Selected three protein spots were identified and showed homology with pyruvate kinase 2 muscle (PKM2), phosphoglycerate mutase 1 (PGAM1) and triosephosphate isomerase 1 (TPI1) of chicken. The PKM2 and TPI1 were correlated with shear force values of chicken meats. Whereas, the PGAM1, B46 and B107 trended toward an association with shear force values. The results indicate that these enzymes of the glycolytic pathway play a major role in the energy metabolism process of muscle and meat characteristics. These findings promote the importance of the muscle metabolic enzymes and could be used as functional candidate genes for meat quality traits in chicken.

Key Word :

broiler, gene expression, muscle, proteome, Thai native chicken

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