P - 125

Proteome Analysis of Porcine White and Red Muscle Types

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Skeletal muscle was an extremely heterogeneous tissue composed of variety of white and red fiber types, and these muscles classified of two major types in white and red muscles. For comparative study of biochemical properties of porcine muscle, we carried out proteome analysis of muscle types and the expression patterns of white and red muscles that were compared mutually by two-dimensional electrophoresis (2-DE). Proteins isolated from porcine white and red muscles, and separated by immobilized pH gradient (IPG) 3-10NL strips in first and 12% acrylamide gel in second dimension. We detected protein spots by silver staining, and then expressed patterns analysis of muscle types using PDQuest (Bio-Rad). Using a 2-DE approach, we have separated over 600 protein spots from porcine two muscle tissues. We found that 5 protein spots were visually identified as differentially expressed between white and red muscles. The molecular weight and pI (isoelectric point) values of each protein spots were analyzed by Swiss-Prot database searching via the ExPASy molecular biology server with TagIdent program. These proteins were expected as troponin I, T and myoglobin. However, further researches were needed for identification and functional analysis of these proteins within the muscle types. In conclusion, there were 5 proteins, which were differentially expressed within two muscle types, and the functional analysis of proteins will provide valuable information to understand biochemical characteristics of muscle types. Also, we suggest that two-dimensional electrophoresis was useful technique for biochemical analysis of muscle tissue.