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ABSTRACT

Proteins in longissimus muscle of Korean native cattle and their relationship to meat quality

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Proteomic profiling by two-dimensional gel electrophoresis and mass spectrometry of longissimus dorsi muscle tissue from Korean native cattle identified seven proteins that are differentially expressed in animals producing low and high quality grade beef. The expression level of alpha actin is increased in high quality grade beef and the expression levels of T-complex protein 1 (TCP-1), heat shock protein beta-1 (HSP27), and inositol 1,4,5-triphosphate receptor type1 (IP3R1), a new protein to be associated with meat quality, are increased in low quality grade beef. In particular, the quantitation of HSP27 and IP3R1 by both silver staining and immunoblotting correlated well with intramuscular fat content, meat tenderness, and free calcium levels. The data suggest that HSP27 and IP3R1 are potential meat quality biomarkers and their identification provides new insight into the molecular mechanisms and pathways associated with overall beef quality.

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