

ABSTRACT

Gene expression profiling of metabolism-related genes between top round and loin muscle of Korean cattle (Hanwoo).

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Using differential display reverse transcriptase polymerase chain reaction, we detected 11 differentially expressed genes between top round and loin muscle in Korean cattle (Hanwoo). In the loin muscle, the lightness (L^*) value ($P < 0.01$) and marbling fat content ($P < 0.01$), which are important factors in determining meat quality, were higher than in top round muscle. Three of the 11 genes were validated as significant genes between two types of muscle by real-time polymerase chain reaction ($P < 0.05$). To determine whether the three genes were associated with meat quality traits, a regression analysis was performed. The result demonstrated that two genes (NADH dehydrogenase 2 and cytochrome oxidase III), which are involved in oxidative phosphorylation in mitochondria, were significantly correlated with marbling fat content in the loin muscle ($P < 0.01$), while two genes were not significant with marbling fat content in top round muscle. No significant effects for two genes on other meat quality traits such as meat color (redness and yellowness value), Warner-Bratzler shear force, and water-holding capacity were detected in this study.

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