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ABSTRACT

Relationships between monounsaturated fatty acids of marbling flecks and image analysis traits in longissimus muscle for Japanese Black steers[1]

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The percentage of MUFA to total fatty acids of beef differs among intermuscular, intramuscular, and subcutaneous fat even within an individual cow. Our objective was to investigate the variation of the percentage of MUFA by geometric and sectional change of marbling flecks in rib eye. Longissimus muscles of 8 Japanese Black steers from a common sire and a common maternal grand sire were used. Three slices (1 from rib roast and 2 from sirloin) from each animal were selected for analysis. Five marbling flecks from each slice were randomly taken to obtain the percentage of MUFA using gas chromatography. High-quality digital images of all slices were taken with a mirror-type camera. The area and location of each marbling fleck were calculated by image analysis. The marbling flecks were categorized by area [small <0.4 cm(2), medium 0.4 to 2.0 cm(2), large >2.0 cm(2)], by location (dorsal and ventral), and by slice section through the LM (front, middle, and back). The effects of classification according to the area, location, and slice section were statistically significant ($P < 0.05$) for the percentage of MUFA. Least squares means of the percentage of MUFA for marbling flecks of sizes small, medium, and large were 56.8, 58.4, and 60.2%, respectively, indicating that larger marbling flecks had greater MUFA ($P < 0.05$). Those of dorsal, ventral, front, middle, and back were 59.1, 57.8, 55.4, 59.9, and 60.1%, respectively. The percentages of MUFA of the marbling flecks located in the dorsal part were greater than those in the ventral part ($P < 0.05$). The percentages of MUFA from middle and back were greater than those from front ($P < 0.01$). We suggest that the area, location, and slice section of marbling would be the determining factors for the percentage of MUFA of marbling.

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