

Comparison of palatability characteristics of beef gluteus medius and triceps brachii muscles

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Abstract :

The objective of this experiment was to evaluate triceps brachii steaks as a substitute for gluteus medius steaks in foodservice and retail applications, including the effect of aging time and USDA quality grade on the palatability of both muscles. Top sirloin butts ($n = 600$) and shoulder clod arm roasts ($n = 600$) representing US Choice and US Select quality grades were selected at 48 h postmortem and aged for 7, 14, 21, 28, 35, or 42 d. Steaks were evaluated using a trained sensory panel, slice shear force, sarcomere length, and Western blotting of desmin measurements. Sarcomere length was measured only on steaks at 14 and 42 d. Triceps brachii and gluteus medius steaks were similar in tenderness rating at 7 and 14 d, but triceps brachii steaks aged longer were more tender ($P < 0.05$) than were gluteus medius steaks. Triceps brachii steaks reached ultimate tenderness values by 21 d. Gluteus medius steak tenderness ratings improved through 35 d, and at 42 d were similar to those given to triceps brachii steaks at 21 d. Sarcomere lengths were longer ($P < 0.05$) in triceps brachii than in gluteus medius (2.09 and 1.58 μm , respectively). Significant increases in desmin degradation were detected through 42 d in both muscles (30.9, 46.3, 50.6, 51.0, 57.6, and 64.1% at d 7, 14, 21, 28, 35, and 42 for gluteus medius and 28.9, 40.8, 49.3, 59.2, 61.8, and 71.9% at d 7, 14, 21, 28, 35, and 42 for triceps brachii). At 14 d, gluteus medius had more ($P < 0.05$) desmin degraded than triceps brachii, but by 28 d, desmin degradation was greater ($P < 0.05$) in triceps brachii. Quality grade had minimal effects on palatability traits. Desmin degradation contributed to gluteus medius tenderness variation ($r = 0.36$) across all aging times, but not at individual aging times. Sarcomere length contributed to variation in slice shear force values of gluteus medius at 14 and 42 d ($r = -0.59$ and -0.48 , respectively). Sarcomere length contributed to triceps brachii tenderness variation at 14 d, but not 42 d ($r = 0.44$ and -0.12 , respectively). Desmin degradation was strongly correlated ($r = 0.55$) to triceps brachii tenderness ratings pooled across aging times but not at individual aging times. These data indicate that triceps brachii steaks could provide the same or improved palatability as gluteus medius steaks at the same or slightly shorter aging times.

Key Word :

gluteus medius, postmortem proteolysis, sarcomere length, tenderness, triceps brachii

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