



Palatability of Beef Chuck, Loin, and Round Muscles from Three USDA Quality Grades

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Abstract

The objective of this study was to determine the palatability of various beef cuts from 3 USDA quality grades. Five different beef subprimals from USDA Prime, Choice, and Select ($n = 10$ /quality grade) carcasses were utilized for the study, including: strip loins, inside rounds, bottom rounds, shoulder clods, and chuck rolls. Subprimals were fabricated into 9 retail cuts, which contained the following beef muscles: *longissimus lumborum* (LL); *longissimus thoracis, complexus, and spinalis dorsi* (LCS); *infraspinatus* (IF); *serratus ventralis* (SV); *triceps brachii* (TB); *teres major* (TM); *adductor* (AD); *semimembranosus* (SM); and *biceps femoris* (BF). The pH and percentage of fat, moisture, protein, and collagen was determined for each muscle on a raw basis. Additionally, cooked steak measurements included Warner–Bratzler shear force (WBSF) and slice shear force (SSF). Consumer and trained sensory panelists evaluated palatability traits of each cut and quality grade combination. A quality grade \times muscle interaction was determined for trained panelists assessment of overall tenderness ($P = 0.03$), SSF ($P = 0.02$), proximate composition ($P < 0.01$), and pH ($P < 0.01$). In all objective and subjective measurements of tenderness, the LCS was the most tender ($P < 0.05$), while cuts from the round (BF, AD, and SM) were among the toughest and least juicy ($P < 0.05$). Conversely, consumers and trained sensory panelists identified the LCS, IF, and SV to be juicier ($P < 0.05$) than all others. The TB, TM, and LL were perceived by consumers most often as being everyday quality. The LCS was found by consumers to be the most acceptable ($P < 0.05$) across all attributes, with the SM being the least ($P < 0.05$) acceptable muscle. For each muscle, fat percentage was the greatest ($P < 0.05$) in Prime cuts. Slice shear force determined Prime IF, LL, and SV to be more tender ($P < 0.05$) than Choice and Select. No SSF differences ($P > 0.05$) were found among quality grades for the AD, BF, and SM. The WBSF values decreased ($P < 0.05$) across all muscles, as quality grade increased (Prime $<$ Choice $<$ Select). The results of this study indicate that muscles from the chuck may be utilized to provide consumers with a positive eating experience. Meanwhile, muscles from the round are likely to provide consumers with a lower quality eating experience.

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