



Sensory and Visual Evaluation of Six Different Beef Shank Cuts from Asian Consumers

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Objectives

The objective of this study was to evaluate factors affecting Asian consumers' purchasing decisions and eating preferences of six different beef shank cuts.

Materials and Methods

Six shank cuts, three from forequarter [*biceps brachii* (shank A); a combination of *deep digital flexor* and *flexor digitorum superficialis* (shank B); *extensor carpi radialis* (shank C)], and three from hindquarter [*flexor digitorum superficialis* (shank D); *deep digital flexor* (shank E), a combination of *long digital extensor*, *medial digital extensor* and *peroneus tertius* (shank F)] were collected from 12 USDA low choice beef carcasses ($n = 72$). Shanks from the left side of the carcasses were used for consumer panels and stewed in water for 90 min at 98°C. Asian consumers ($n = 91$) from Manhattan, KS, evaluated samples for connective tissue texture, amount of connective tissue, juiciness, flavor, overall texture (a combination of myofibrillar tenderness and connective tissue texture) and sensory overall liking. Consumers ($n = 84$) also visually evaluated the size, surface color and visual overall liking of shank samples from the right side of the carcasses. Finally, consumers rated each sample as either acceptable or unacceptable. All ratings were done on either a Just About Right (JAR) or a continuous line scale.

Results

Shanks A, C, D and F received similar scores close to JAR ($P > 0.05$) for connective tissue texture. Connective tissue texture of shank E was harder than shanks A and D, and shank B was the hardest of all ($P < 0.01$). For connective tissue amount, shanks A, D, and E received ratings

close to JAR ($P > 0.05$). Consumers rated shank B with too much and shank C and F with too little ($P < 0.01$) connective tissue. Shanks A, D, and F received similar ratings close to JAR for juiciness ($P > 0.05$), while shanks C and E were rated less juicy, and shank B was the least juicy among all ($P < 0.01$). For overall texture, shanks A, D, and F received similar ratings close to JAR ($P > 0.05$), and shanks C and E were tougher than those rated JAR ($P < 0.01$). Again, shank B was the toughest among all for overall texture ($P < 0.01$). Shanks A, D, and F received the highest sensory overall liking scores, followed by shanks C and E, and shank B received the lowest overall liking score among all the shank cuts ($P < 0.01$). All shank cuts received high sensory acceptability scores ($> 85\%$) except for shank B (62%; $P < 0.01$). Shanks A and C both received scores that were close to JAR for shank size. Consumers indicated that shanks B, E, and F were too big in size, while shank D was too small ($P < 0.01$). However, shanks B, C, E, and F had the greatest and similar raw weight ($P > 0.05$), followed by shank A, while shank D was the lightest of all ($P < 0.01$). For visual overall liking, shanks A and C received the highest scores, followed by shanks B, E, and F, and shank D received the lowest score ($P < 0.05$). Shanks A and C were most visually acceptable ($> 95\%$), while shanks B, D, E, and F were less acceptable than shanks A and C ($> 70\%$; $P < 0.01$). Finally, consumers indicated that there was no difference in flavor and surface color among different shank cuts ($P > 0.05$).

Conclusion

Connective tissue texture and amount directly affected Asian consumers' eating preference for different beef shank cuts, while shank size was the main factor affecting their purchasing decision.