

## 2018 Reciprocal Meat Conference – Consumer Topics

## Meat and Muscle Biology™



## Consumer Sensory Evaluation of Beef Strip Loin Steaks from 5 Quality Treatments Cooked To 6 Degrees of Doneness

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### Objectives

The objective of this study was to determine the effect of degree of doneness (DOD) on the palatability of beef strip loin steaks of varying marbling levels.

### Materials and Methods

Paired strip loins (IMPS # 180) were collected from 4 USDA quality grades [Prime, Top Choice (Modest and Moderate marbling), Low Choice, Select;  $n = 12$  pairs/quality grade]. Additionally, 12 pairs of Select strip loins were collected for a salt and alkaline phosphate enhancement solution (108% of raw weight). Subprimals were aged for 21 d and fabricated into 2.54-cm thick steaks. Steaks were fabricated in groups of 3 consecutively cut steaks, with a total of 6 groups per strip loin pair. Groups were assigned to a DOD: very-rare (55°C), rare (60°C), medium-rare (63°C), medium (71°C), well-done (77°C) or very well-done (82°C). Steaks were cooked on clamshell style grills to their specified DOD. Consumers ( $n = 360$ ) were fed 8 samples under red lighting and evaluated for juiciness, tenderness, flavor, and overall liking on continuous line scales. Additionally, consumers rated each trait as either acceptable or unacceptable.

### Results

There were no interactions ( $P > 0.05$ ) between quality treatment and DOD for consumer ratings of all palatability traits. Select Enhanced steaks had the highest ( $P < 0.05$ ) consumer ratings for all traits, followed by Prime steaks having higher ( $P < 0.05$ ) ratings than Top Choice, Low Choice, and Select steaks. Select steaks had the lowest ( $P < 0.05$ ) consumer ratings for all traits except tenderness, for which they were similar ( $P > 0.05$ )

to Low Choice. Juiciness was similar ( $P > 0.05$ ) between very-rare and rare, as well as between rare and medium-rare. Very-rare, rare, and medium-rare steaks had similar ( $P > 0.05$ ) ratings for all palatability traits except juiciness. There was a quality grade by DOD interaction ( $P < 0.05$ ) for the percentage of steaks rated acceptable for juiciness, tenderness, and overall liking. At very rare, rare, and medium-rare, all quality grades except Select were similar ( $P > 0.05$ ) in the percentage of steaks rated acceptable for juiciness. However, as DOD increased, marbling had a greater impact, with Prime having a greater ( $P < 0.05$ ) number of samples rated acceptable for juiciness than all non-enhanced samples at very well-done. Select Enhanced steaks had the greatest ( $P < 0.05$ ) percentage of samples rated acceptable for tenderness at very-rare, but Prime was similar ( $P > 0.05$ ) to Select Enhanced for all other DOD. Additionally, Select had the lowest ( $P < 0.05$ ) percentage of steaks rated acceptable for tenderness at medium-rare and medium, but were similar ( $P > 0.05$ ) to Low Choice at all other DOD. Prime and Select Enhanced steaks had similar ( $P > 0.05$ ) percentages of samples rated acceptable overall for all DOD except medium and well-done, in which Select Enhanced was higher ( $P < 0.05$ ). Select had a similar ( $P > 0.05$ ) percentage of steaks rated acceptable as both Choice treatments at very-rare and rare, but had a lower ( $P < 0.05$ ) percentage than Low Choice at medium-rare and was lower than both at medium.

### Conclusion

These results indicate that increased marbling level or enhancement has a positive impact on palatability ratings across all DOD. However, beef with higher marbling levels are acceptable at a higher rate at elevated DOD. With this, consumers can purchase steaks of lower quality when cooking to lower DOD, and vice versa, and still have a desirable eating experience.