



## Effects of Reduced-Fat Modified Distillers Grains with Solubles in Finishing Diets of Feedlot Steers on Fresh and Processed Beef Quality

M. Nelson\*, C. E. Fehrman, A. A. Hohertz, A. DiCostanzo, and R. B. Cox

Animal Science, University of Minnesota, St. Paul, MN, USA

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### Objectives

The impact of utilizing varying concentrations of reduced-fat modified distillers grains with solubles (RFMDGS) was evaluated using fifty crossbred (Angus × Gelbvieh × Holstein × Jersey) steers (initial body weight:  $379 \pm 32$  kg) that were randomly assigned to one of four dietary treatments.

### Materials and Methods

Dietary treatments consisted of: 14.93% RFMDGS of diet dry matter (DMD) with 0.74% corn oil DMD (FF15); 15.60% RFMDGS DMD (RF15); 30.84% RFMDGS DMD (RF30); and 46.27% RFMDGS DMD (RF45). All steers received Rumensin. Steers were fed dietary treatments for 181 d utilizing a Calan gate system then fed a common diet for 4 d before harvesting at a commercial abattoir. Hot carcass weight (HCW), 12th rib backfat (BF), ribeye area (REA), percent kidney, pelvic, and heart fat (KPH), and marbling score data were collected 24 h postmortem. Strip loins (IMPS #180) were collected for vacuum purge loss evaluation and fabricated into 2.54 cm steaks for drip loss, cook loss, Warner-Bratzler shear force (WBSF), and sensory evaluation ( $n = 122$ ). Shoulder clods (IMPS # 114) were used to create ground beef and bologna. Thiobarbituric acid reactive substances (TBARS) analysis occurred utilizing ground beef while bologna samples were evaluated for sensory attributes ( $n = 108$ ). Twelfth rib backfat was analyzed for fatty acid composition and calculated iodine value. All data was analyzed using PROC MIXED procedure in SAS (SAS Inst. Inc., Cary, NC).

### Results

There was no treatment effect for HCW ( $P = 0.96$ ), BF ( $P = 0.63$ ), REA ( $P = 0.62$ ), KPH ( $P = 0.27$ ), or marbling score ( $P = 0.67$ ). All moisture loss attributes did not differ among treatments ( $P = 0.09$ ). Warner-Bratzler shear force values for FF15 were greater compared to all other treatments ( $P < 0.01$ ). There was no treatment effect for overall liking ( $P = 0.15$ ), flavor liking ( $P = 0.75$ ), texture liking ( $P = 0.07$ ), or off-flavor ( $P = 0.72$ ) in steak sensory analysis. Subjective toughness values of steaks from FF15 were higher than RF15 (10.78 and 8.77, respectively;  $P = 0.01$ ). Subjective juiciness values of steaks from FF15 were higher than RF45 (8.50 and 6.94, respectively;  $P = 0.03$ ). There was no treatment effect for flavor liking or off-flavor in bologna sensory analysis. Subjective overall liking was higher in RF45 compared to FF15 bologna samples (78.14 and 71.63, respectively;  $P = 0.03$ ). Subjective texture liking of bologna from RF45 were higher than FF15 (78.25 and 67.51, respectively;  $P < 0.01$ ). Subjective toughness liking of bologna from RF30 and RF45 were higher compared to FF15 (77.21, 78.25, and 67.51, respectively;  $P < 0.01$ ). There was no treatment effect for d 0 or d 14 TBARS ( $P = 0.94$  and  $P = 0.27$ , respectively). Treatment did not affect percentage of linoleic acid (C18:n-6,  $P = 0.34$ ). There was no treatment effect on calculated iodine value ( $P = 0.59$ ).

### Conclusion

Although results indicate feeding 45% RFMDGS had no effect on carcass characteristics, it did decrease fresh beef quality, increase processed beef quality, and had minimal effects on fatty acid composition.