

Effect of Modified Distillers Grains with Solubles and Crude Glycerin in Finishing Diets on Beef Quality

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Crossbred steers and heifers (n = 48) were assigned randomly to one of four treatments and fed individually using a Calan feeding system. Treatment diets were a traditional steam flaked corn diet with no modified distillers grains with solubles (MDGS) or crude soybean glycerin (CON); CON with 35% substitution of MDGS; CON with 10% glycerin added (GLY); and both 35% MDGS and 10% glycerin added (MDGS/GLY). At a mean weight of 590 kg, cattle were humanely harvested at a commercial abattoir in two groups. Strip loins and shoulder clods were removed from the right side of each carcass 48 hours post mortem, vacuum packaged, and stored refrigerated. Seven 2.54-cm steaks were cut serially from the anterior end of each strip loin for further analysis. Data were analyzed using the PROC MIXED procedure of SAS. Shoulder clods were ground individually, twice through a 0.375-cm grinder plate for ground beef analysis. Treatment did not affect vacuum purge loss ($P = 0.75$), cooking loss ($P = 0.40$), or drip loss ($P = 0.06$). Treatment did not affect Warner-Bratzler shear force values ($P = 0.94$), however shear force was numerically lower for MDGS. Additionally, treatment had no effect on any specific fatty acid ($P > 0.05$), however did show a trend ($P = 0.06$) with MDGS having a higher percentage of C18:2 than CON. Also, there were no differences between treatments for saturated ($P = 0.99$) and monounsaturated fatty acids ($P = 0.53$), however there was a trend for polyunsaturated fatty acids ($P = 0.06$) with MDGS having a higher percentage than CON. There were no differences between treatments for objective color values L*, a*, or b* ($P = 0.40, 0.90$ and 0.64 , respectively) for strip steaks. Additionally, lean color, surface discoloration, and overall appearance of strip steaks was not affected by treatment ($P = 0.76, 0.97$ and 0.95 , respectively) for all seven days of the trial. Treatment did not affect ground beef L*, a*, or b* values ($P = 0.06, 0.09$ and 0.89 , respectively) or subjective lean color, surface discoloration, and overall appearance ($P = 0.87, 0.89$, and 0.35 , respectively). No differences were shown between treatments for thiobarbituric acid reactive substances (TBARS) values on day 0 or 7 ($P = 0.59$ and 0.49 respectively). CON and MDGS had higher values for consumer overall liking and texture liking of strip steaks ($P = 0.02$ and 0.002 respectively). Treatment did not affect flavor liking, however did show a trend ($P = 0.08$) with MDGS having higher values than MDGS/GLY. MDGS/GLY had higher toughness values than CON and MDGS, but not GLY ($P < 0.001$) and CON had the highest values for juiciness ($P < 0.001$). (Results indicate that the addition of MDGS and crude glycerin in beef finishing diets did not negatively affect moisture loss, shear force, color stability, or lipid oxidation in strip steaks and ground beef, however, may impact sensory characteristics of beef strip steaks.)