Cattle fed distiller's grains maintain flavor and tenderness of beef

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The availability and use of wet distiller's grains in beef finishing diets continues to increase as the ethanol industry expands, and some Texas AgriLife Research scientists are trying to determine if that will affect consumers' meat purchases.

While much of the research focus has been on the energy value of the distiller's grains relative to the corn it replaces, recent questions have been posed on how they may affect beef quality, said Dr. Jim MacDonald, AgriLife Research ruminant nutritionist.

The concern is based on the premise that replacing corn, which is primarily starch, with distiller's grains, which has essentially no starch, will reduce blood glucose and negatively impact the marbling of beef cuts, MacDonald said.

MacDonald and others conducted a study funded by the $1-per-head beef checkoff, Texas Beef Council, and a cooperative agreement between the U.S. Department of Agriculture-Agriculture Research Service and AgriLife Research.

In the study, 54 steers were fed dry-rolled corn or steam-flaked corn-based finishing rations with or without 35 percent wet distiller's grain, he said. The goal was to determine the effects of the corn processing and the inclusion of distiller's grain on marbling attributes, sensory attributes and shelf-life of beef loins.

The final data indicated that feeding 35 percent wet distiller's grains in both of the finishing diets may decrease the shelf-life of beef, but likely will have little impact on beef taste and quality, MacDonald said.

In the study, a single one-inch thick steak was removed from the 13th rib end of the loin from each animal, MacDonald said. The steaks were vacuum-packaged and aged for 14 days prior to freezing.

Sensory analysis was performed at Texas A&M University with trained panelists. The beef was judged for palatability attributes such as juiciness, tenderness and flavor.

"When you add distiller's grains to steam-flaked corn-based diets, it does not negatively affect palatability attributes," MacDonald said. "In fact, our panel found those steaks with distiller's grains to be slightly more tender."

The results indicate that the corn-processing method affects sensory properties of steaks; but while consistent, the differences were minimal, MacDonald said.

Sensory differences also were detected in steaks from steers fed differing levels of dietary wet distiller's grain plus solubles; however, the differences were slight, MacDonald said. It is unknown if the levels detected by expert, trained sensory panelists would be detected by consumers.

Another finding of this study was that distiller's grain byproducts increased the muscle concentration of linoleic acid, said Dr. Stephen Smith, AgriLife Research professor of animal science at Texas A&M University.

Increasing the concentration of linoleic acid in beef makes it more

susceptible to producing a warmed-over flavor if it is stored in the refrigerator after cooking, Smith said.

The addition of distiller's grain byproducts to finishing altered the activity of enzymes important in the deposition of marbling fat also, he said. As a result, beef from cattle fed distiller's grain byproducts was higher in saturated and trans-fatty acids, and lower in the monounsaturated fatty acid, oleic acid, than beef from cattle not fed distiller's grains.

Smith said even though palatability attributes were not affected by distiller's grain byproducts, the composition of the beef changed quite a bit.

Steaks from steers fed distiller's grains may be darker in color and were more susceptible to lipid oxidation after five days of storage, MacDonald said.

But incorporation of wet distiller's grains into steam-flaked corn-based diets does not appear to affect beef quality differently than incorporation into dry-rolled corn-based diets, he said.

These results indicate that feeding wet distiller's grains to feedlot cattle may impact the shelf-life of beef, but likely has minimal effects on beef taste and quality, MacDonald said.

Source: Texas A&M AgriLife Communications