

# Evaluation of Wheat DDGS as a Barley Grain Substitute for Early Lactating Dairy Cows

Y. Q. Sun, and M. Oba

Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada T6G 2P5

Email: [moba@ualberta.ca](mailto:moba@ualberta.ca)

Calving transition is a critical period for dairy cows; they experience negative energy balance after parturition, and most health disorders occur during this period. However, the effort to increase their energy intake by feeding a high grain diet may increase the risk of rumen acidosis. Dried distillers' grains with soluble (DDGS), a byproduct from ethanol industry, contains little starch but highly digestible fiber, and we hypothesized that a partial replacement of a dietary grain source with DDGS would increase rumen pH and productivity of dairy cows in early lactation. The objective of this study was to evaluate effects of substitution of barley grain with wheat DDGS on DMI, milk production and rumen pH of early lactating dairy cows.

Fifty-six Holstein cows were blocked by parity and calving date, and assigned to one of two experimental diets immediately after calving (11 primiparous and 17 multiparous cows per treatment). Experimental diets contained either steam-rolled barley (Control) or wheat DDGS at 17% of dietary DM. Both diets were formulated to contain 19.5% CP, 22.6% forage NDF and 5.4% fat but dietary NFC contents were 38.1% and 32.3% for Control and DDGS diet, respectively. Dry matter intake, milk yield, and milk composition were determined during the first 4 wk after parturition. Rumen pH was measured every 30 sec for a 72-h period every week ( $n = 4$  for each treatment). Contrary to the hypothesis, cows fed the DDGS diet had a weak tendency of lower mean rumen pH (6.27 vs. 6.46;  $P = 0.12$ ). Tendencies of interaction between parity and treatment were observed for DMI ( $P = 0.06$ ) and milk yield ( $P = 0.11$ ); compared with Control, feeding the DDGS diet increased DMI (13.6 vs. 12.4 kg/d) and milk yield (28.6 vs. 25.6 kg/d) for primiparous cows, but decreased DMI (18.5 vs. 20.2 kg/d) and milk yield (38.7 vs. 40.5 kg/d) for multiparous cows.

**Implications:** Replacing barley grain with wheat DDGS may not increase rumen pH, but increased the productivity of primiparous cows in early lactation. Wheat DDGS can be used as a substitute for barley grain if its price is lower than barley grain.