

Effects of Feeding Triticale Dried Distillers Grains with Solubles as a Protein Source on Productivity of Lactating Dairy Cows

M. Oba, T. D. Whyte, K. T. Wierenga, G. B. Penner

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

Email: masahito.oba@ualberta.ca

Utilization of dried distillers grains with solubles (**DDGS**) in the diets of lactating dairy cows has been drastically increasing. Triticale (a cross of wheat and rye) can be a potential substrate for ethanol production because of its high starch content and drought resistance. However, feeding values of triticale DDGS (**TDDGS**) relative to corn DDGS (**CDDGS**), canola meal (**CM**) or soybean meal (**SBM**) are not known. Thus, the objective of the study was to evaluate the effects of replacing protein sources that are commonly used in North America with TDDGS on the productivity of lactating dairy cows.

Crude protein content (%DM) was 31.1, 30.1, 39.9, and 51.4%, and rumen degradable protein (**RDP**, %CP) was 64.5, 69.3, 62.2, and 53.0%, respectively for TDDGS, CDDGS, CM, and SBM. Four experimental diets, formulated to contain 17.2% CP and 21.2% forage NDF, were fed to multiparous lactating dairy cows (130 ± 40 days in milk). Experimental diets contained 17.1% TDDGS, 17.5% CDDGS, 13.1% CM, or 10.2% SBM (dietary DM) so that each feedstuff supplies 30% of total dietary CP. Dry matter intake and milk yield were not affected by treatment. However, compared to cows fed CM or SBM, cows fed CDDGS had a lower plasma glucose concentration (49.3 vs. 53.5 and 52.6 mg/dL, respectively), and decreased yields of milk crude protein (1.01 vs. 1.17 and 1.14 kg/d, respectively) and milk lactose (1.43 vs. 1.66 and 1.59 kg/d, respectively). However, cows fed TDDGS had similar plasma glucose concentration (53.5 mg/dL), and milk crude protein (1.10 kg/d) and milk lactose (1.57 kg/d) yields as cows fed CM or SBM. Furthermore, cows fed TDDGS or SBM had a greater BW gain compared to cows fed CDDGS (514 and 390 vs. -290 g/d, respectively).

Implications - The TDDGS can replace CM or SBM in the diets of lactating dairy cows without adverse effects on production, and may be a better protein source than CDDGS. Our findings can be at least partially attributed to the difference in RDP. Although DDGS has been generally accepted as a low-RDP feed (< 50%), the high RDP content for CDDGS (69.3%) and TDDGS (64.5%) used in the present study suggest that we need to be aware that large variations in RDP may be possible among different lots of DDGS.