

## Effects of processing severity for reconstituted high moisture barley with variable kernel size on ensiling characteristics and in vitro ruminal fermentation

B. Lynch, T. Mutsvangwa, G.O. Ribeiro and G.B. Penner.  
University of Saskatchewan, Saskatoon, SK S7N 5A8. Bal523@usask.ca

The objective was to evaluate how processing severity for reconstituted high moisture barley (**RHB**) affects ensiling characteristics and in vitro ruminal fermentation. Three sources of light (605 g/L) and heavy (684 g/L) barley were blended to create four lots of variable kernel sized barley (646 g/L). Barley was then dry rolled (**DR**) to a processing index (**PI**) of 75% or used to produce RHB. For RHB, water was added to achieve 65% DM followed by tempering for 24 h. Thereafter, RHB was rolled to achieve PI values of 65% (RHB65), 75% (RHB75), or 85% (RHB85). The RHB was packed into miniature silos (density 2.15 kg/L) and allowed to ensile for 1 or 5 mo. The RHB ensiled for 1 mo and the DR barley were used to evaluate in vitro ruminal fermentation using the rumen simulation technique. The RHB had greater kernel width prior to rolling and increased kernel length, width, and thickness following rolling than DR. Decreasing the PI from 85 to 75 and 65% for RHB progressively increased kernel thickness. The percentage of fine particles (<1.18 mm) was greater for DR than RHB. The severity of RHB processing did not affect post-ensiling pH, but lactic acid concentration was greater after 5 than 1 mo. The 7-h starch digestibility was greater for 5-mo than 1-mo ensiling and was increased with decreasing PI. Dry matter and organic matter disappearance were greatest for DR and RHB65, intermediate for RHB75, and least for RHB85. Fermenter pH was least for DR, greatest for RHB75 and RHB85, with RHB65 being intermediate but not different from other treatments. Methane production was greatest for DR, least for RHB75 and RHB85, and intermediate but not different for RHB65. Total microbial nitrogen flow was greatest for DR, intermediate for RHB65 and RHB75, and least for RHB85.

**Take Home Message:** Relative to DR, use of moisture in RHB to swell kernels and prevent shattering during processing may be used to prevent a decline in pH but yield similar digestibility suggesting lesser risk for ruminal acidosis.

## Processing induced change in feed milk value of oat grain in comparison with common barley grain for lactating dairy cows: Effect of technological treatments

Marcela R. Tosta, Luciana L. Prates, María E. Rodríguez Espinosa, Peiqiang Yu\*  
*Department of Animal and Poultry Science, College of Agriculture and Bioresources, University of Saskatchewan, 51 Campus Drive, Saskatoon, SK, S7N 5A8, Canada.* \*Corresponding author: Professor & Ministry of Agriculture Strategic Research Chair; Tel: +1 (306)-966-4132; peiqiang.yu@usask.ca

This study aimed to evaluate the effect of technological processing methods on changes in feed milk value of oat grain for lactating dairy cows in comparison with common rolled barley grain. The processing methods used in this study included pelleting, steam-flaking, and rolling, which were carried out at Canada Feed Research Center (CFRC, SK, Canada). The experimental design was a completely randomized design (CRD) with one way treatment structure. The data were analyzed with the MIXED procedure of SAS 9.4 using the CRD model with processing method as the fixed effect. The feed milk value was evaluated based on total truly absorbable protein value which were contributed from truly absorbable microbial protein, truly absorbable rumen undegraded protein, and endogenous protein. The results showed that the feed milk value significantly differed between oat and barley grain. The rolled barley grain was relatively higher in feed milk value than that in average of oat grain treatments. Among oat processing treatments, the steam-flaking processing resulted a numerically higher feed milk value than rolling and pelleting (1.36 vs. 1.21 and 1.27 kg milk /kg feed, respectively).

**Take home message:** This result indicated that the different processing methods may have different impact on feed milk value of grain. It is important to choose a right processing method for different types of grain.