Long-term influence of feeding barley treated with lactic acid and heat on performance and energy balance in dairy cows

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Abstract:

The study evaluated the long-term influence of feeding ground barley treated with lactic acid (LA) alone or with LA and heat on performance, energy and protein balance in dairy cows. Thirty cows were fed three diets differing in the treatment of barley grain, either unprocessed ground barley (Control), ground barley steeped in 1% LA at room temperature (LA-treated barley) or ground barley steeped in 1% LA with an additional heating at 55°C (LAH-treated barley). Cows were studied from week 3 to 17 post-partum. Dry matter intake (DMI), milk yield and composition and body weight (BW) were measured daily. Estimated energy and protein balances were calculated and blood samples were collected three times during the experiment and analysed for common metabolites of energy and lipid metabolism. Digestibility of different treated barley and other dietary ingredients was investigated in vivo using four wethers. The treatment of barley with LA and LAH increased the digestibility of organic matter (OM) by approximately 5% and the content of metabolisable energy by 0.5–0.6 MJ/kg DM. Data showed no effect of feeding diets containing LA- or LAH-treated barley at 39% of DM on overall DMI, BW, BW change, milk production and composition and on the blood variables studied. Diet influenced the estimated balances of net energy of lactation (p

Keywords:

Acidification; barley; dairy cows; digestibility; energy balance; heat treatment; lactic acid; performance

Published In: