Effect of substituting soybean meal with fermented soybean meal on serum metabolites, milk production and milk quality in dairy cows

Seon Pil Yoo[1], Hyun Jin Kim[1], Jong-Hwa Lee[2], Myunggi Baik[1]*

[1]Department of Agricultural Biotechnology and Research Institute of Agriculture and Life Sciences, College of Agriculture and Life Sciences, Seoul National University, Seoul 08826, Republic of Korea
[2]FEEDUP Co., Ltd., Nonsan 32944, Republic of Korea
*Corresponding author: mgbaik@snu.ac.kr

Introduction

Soybean meal (SBM) is one of the major protein sources for dairy cattle. Rumen undegradable protein (PUB) has higher efficiency of nitrogen utilization than rumen degradable protein (RDP), therefore, increasing RUP of soybean meal is important. Previous study showed that fermented soybean meal (FSBM) improved growth performance in non-ruminants. The purpose of this study was to investigate the effects of FSBM on milk production and milk quality in dairy cows.

Aim

The aim of this study was to investigate the effect of substituting soybean meal with fermented soybean meal on serum metabolites, milk production and milk quality in dairy cows.

Methods

Sixty-seven lactating Holstein cows with an average parity of 2.6 ± 0.83 had been fed 33 kg TMR including 320 g SBM daily before the experiment started. Cows were fed 33 kg TMR including 320 g FSBM daily during the experiment. Milk was collected d -1 prior to the experiment (control group) and at d 30, d 60, and d 90 of the experiment (treatment group). Blood was collected d -1 prior to the experiment (control group) and at d 50 of the experiment (treatment group).

Results

FSBM increased ($P < 0.01$) milk urea nitrogen (MUN) and milk protein content (%) and tended to decreased somatic cell count (SCC), milk fat content (%). Milk yield tended ($P < 0.1$) to be higher in treatment group than control group. FSBM did not affect blood glucose and blood urea nitrogen (BUN), although it decreased ($P < 0.05$) non-esterified fatty acid (NEFA) and alanine aminotransferase (ALT).

Conclusion

FSBM affected MUN and several blood metabolites in dairy cows. The data of this experiment may serve as a base for future studies on producing high lysine contented fermented soybean meal.