

Effect of organic chromium supplementation on lactation performance and blood parameters of Holstein cows during plum rain season ⁽¹⁾

Chun-Ta Chang ⁽²⁾⁽⁴⁾ Tzong-Faa Shiao ⁽²⁾ Der-Wei Yang ⁽²⁾ Hsiu-Wen Ho ⁽²⁾
Chao-Hsien Hsieh ⁽²⁾ and Churng-Faung Lee ⁽²⁾

Received: May 29, 2015; Accepted: Jul. 20, 2015

Abstract

The purpose of this study was to evaluate the effects of dietary supplementation of organic chromium on lactation performance and blood parameters response of Holstein lactating cows during the plum rain season (the East Asian rainy season, April and May). A complete randomized design with 10 days covariate adjustment was adopted. A total of 24 Holstein lactating cows were assigned into two groups according to their body weight, milk yield, parity and days in milk. Cows received diets containing 0 (control) and 0.5 ppm of organic chromium for 20 days. The averaged temperature-humidity index (THI) was 78.6. Results showed that it had trend to increase dry matter intakes ($p = 0.11$) and milk efficiency (milk/intake) ($p = 0.13$) by adding chromium. Adding chromium significantly increased milk protein and solid-not-fat concentration ($p < 0.05$) and tended to increase lactose concentration ($p = 0.12$) and decrease somatic cell count ($p = 0.16$). There was a trend of decrease with chromium supplementation, compared with control ($p = 0.09$) in blood glutamic oxaloacetic transaminase activities, but the enzyme activities of creatine kinase, glutamate-pyruvate transaminase and lactate dehydrogenase were not significantly affected by adding chromium. In conclusion, adding chromium to the diet of lactating cows had a tendency to relieve stress during the plum rain season.

Key words: Holstein lactating cows, Milking performance, Organic chromium.

(1) Contribution No. 2304 from Livestock Research Institute, Council of Agriculture, Executive Yuan.

(2) Animal Industry Division, COA-LRI, Hsinhua, Tainan, Taiwan, R.O.C.

(3) Nutrition Division, COA-LRI, Hsinhua, Tainan, Taiwan, R.O.C.

(4) Corresponding author, E-mail: ctchang@mail.tlri.gov.tw.