



Microencapsulated sodium selenite in dairy cows: effect on selenium status

E. Grilli, P. Fantinati, M. Morlacchini, A. Piva

(2012) Proceedings of ADSA-CSAS-ASAS Joint Annual Meeting. July,15-19, Phoenix, AZ. J. Anim. Sci. Vol. 90, E-Suppl. 3/J. Dairy Sci. Vol. 95, E-Suppl. 2

The objective of the study was to assess the selenium status of dairy cows fed with 3 different sources of selenium; that is, free or microencapsulated sodium selenite and yeast selenium. Thirty dairy cows were divided in 5 groups and fed the same total mixed ration with 5 different supplementations of selenium: the control group (CTR) received sodium selenite at 0.3 mg/kg DM; M1 and M2 group received lipid microencapsulated sodium selenite at 0.3 mg/kg, and 0.5 mg/kg DM, respectively; Y1 and Y2 group received selenized yeast providing selenium at 0.3 mg/kg and 0.5 mg/kg, respectively. Cows were fed the supplements for 56 d during which milk, blood, and fecal samples were collected weekly to perform selenium content analysis and glutathione peroxidase 1 (GPx-1) activity. Data measured over time were subjected to ANOVA using the repeated measures in the mixed procedure of SAS in a complete randomized design. The statistical model included the fixed effect of treatment, time of measurement and (treatment x time) interaction. The random variable was the cow within treatment. Pre-experimental variables were subjected to analysis of covariance for adjustments. Cows fed with 0.3 mg/kg of microencapsulated selenium had 6.6% and 5.7% higher total plasma selenium concentration than CTR and Y1 group, respectively. Also, milk selenium concentration was higher in M1 group compared with CTR and Y1 group (+38.2% and 13.1%, respectively; source effect). The increment was more pronounced at the highest inclusion rate (0.5 mg/kg, M2 group). Despite the higher selenium content in body fluids observed in animals fed the microencapsulated form, GPx-1 activity was not significantly affected by treatments. The results showed that lipid microencapsulation is a suitable technique to protect nutrients from ruminal reduction of bioavailability and that microencapsulated sodium selenite is absorbed and incorporated in tissues (plasma and milk) in a more efficient way than in the free form. Microencapsulated sodium selenite resulted also comparable to Se-yeast in terms of availability and incorporation in milk when fed at 0.3 mg/kg DM, whereas the inclusion in the diet at 0.5 mg/kg DM resulted more advantageous for the microencapsulated form.

HEADQUARTERS:

Vetagro S.p.A.
Via Porro 2 42124 Reggio Emilia - Italy
info@vetagro.com
infowesteu@vetagro.com
Tel: +39 0522 186 1500
Fax: +39 0522 92 7025
www.vetagro.com

OTHER LOCATIONS:

Vetagro Eastern Europe Kft.
Váci utca 81 1056 Budapest - Hungary
infoeasteu@vetagro.com
Tel: +39 0522 186 1500
Fax: +39 0522 92 7025

Vetagro Yem Ticaret A.Ş.
Levent Mahallesi, Cömert Sokak, No: 1
Yapı Kredi Plaza C blok Kat:17 No:40-41
Ofis:16 34330 Beşiktaş - Istanbul
info@vetagro.com
Tel: +90 212 318 9059
Fax: +90 212 317 4701

Vetagro Inc.
230 South Clark Street, # 320,
Chicago, IL 60604 - USA
infousa@vetagro.com
Tel: +1 773 610 2087
Fax: +1 773 442 0131