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Effect of different selenium sources on blood and milk selenium levels in dairy cows

Brucker, L.[1], Schenkel, H.[1] and Warren, H.[2], [1]University of Hohenheim, Landesanstalt für Landwirtschaftliche Chemie , 70599 Stuttgart, Germany, [2]Alltech Biotechnology Centre, Dunboyne, Co Meath, Ireland; hwarren@alltech.com

Research has highlighted the potential positive effects of feeding organic compared with inorganic selenium (Se) sources. The present work is a field study, involving 15 farms from Bavaria, was carried out to investigate the influence of differing sources of dietary Se on whole blood, plasma and milk Se contents, as well as GSHPx activity. Following an initial synchronisation phase, during which all animals (n=150) were offered 0.3mg/kg of Se as sodium selenite (NaSe), animals were allocated to one of three dietary treatments differing in their Se source: NaSe, rumen-stable NaSe or Se yeast (Sel-Plex®, Alltech Inc., KY) provided at a rate of 0.3 mg/kg of Se via the mineral feed. All diets were analysed monthly for Se level. Initial whole blood, plasma and milk Se levels were determined in 10 animals per farm and animals remained on treatment for 105d after which final whole blood, plasma and milk Se levels were determined. All animals had high blood Se levels prior to the experimental (93% of animals were between 80-110µg/l). Despite this, there were significant differences between all sources of Se for whole blood and plasma. Mean whole blood Se levels differed significantly ($p<0.05$) at 190, 232 and 255µg/l for NaSe, rumen-stable NaSe and Se yeast, respectively. Mean plasma Se contents were significantly ($p<0.001$) different at 74, 89 and 108µg/l for NaSe, rumen-stable NaSe and Se yeast, respectively. Significant ($p<0.05$) differences were also noted between the NaSe and both treatment groups for GSHPx activity at 280, 312 and 322U/g Hb for NaSe, rumen-stable NaSe and Se yeast, respectively. With regards to milk Se, the two inorganic Se sources had a significantly ($p<0.001$) lower mean of 0.027 compared with 0.055µg/ml for the Se yeast. These data suggest that significant enrichment of milk Se can only be achieved via organic Se sources.