

## Effect of dietary Selenium source on animal performance during immune challenge in lactating Holstein cows

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Selenium (Se) is an important dietary antioxidant required to mitigate free radical production, which can lead to oxidative stress and decreased animal health and performance. The objective of this experiment was to determine how source of dietary Se affects antioxidant status and animal performance during an intramammary endotoxin challenge. Twenty mid-lactation multiparous Holstein cows ( $591 \pm 46$  kg body weight, parity 2-4) were blocked by days in milk ( $157 \pm 17$  DIM) and randomly assigned to one of two treatments: 1) 0.30 ppm (100% NRC requirements) of dietary organic (selenized yeast) Se (dry matter basis) premix, or; 2) 0.30 ppm of dietary inorganic (sodium selenite) Se premix, top dressed and mixed into a basal ration daily. Dry matter intake (DMI) and milk production were recorded daily. Following a 75 day dietary adaptation period, cows were infused with 50  $\mu$ g of lipopolysaccharide (LPS; *Escherichia coli* strain O111:B4) diluted in 10 ml of sterile saline in one front quarter. Rectal temperatures were recorded at -1.5, 0, 2, 4, 6, 8, 10, 12, 24 hr. During the adaptation period, average weekly DMI and milk production were not different ( $P > 0.05$ ) between treatments. Results revealed no treatment differences in body temperature, daily milk production or DMI during the LPS challenge, although there was a time effect for all parameters ( $P < 0.001$ ). There was a tendency ( $P = 0.07$ ) for inorganic cows to have greater DMI in the 12 hours following LPS infusions. These results indicate that animal performance during immune challenge is minimally affected by source of dietary Se. Further analysis is required to determine antioxidant capacity and oxidative stress levels in cows supplemented with differing sources of Se.