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## Veterinarni Medicina

**Effect of a long-term peroral supplementation with sodium selenite and selenium lactate-protein complex on selenium status in goats and their kids**

Misurova L., Pavlata L., Pechova A., Dvorak R.:

Veterinarni Medicina, 54 (2009): 324-332

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The aim of this study was to evaluate the effect of a long-term peroral selenium supplementation in the form of sodium selenite and selenium lactate-protein complex by comparing selenium concentrations and glutathione peroxidase activity in blood of goats and their kids as well as comparing selenium concentrations in goat colostrums. For the study, a total of 27 clinically healthy pregnant white shorthair goats were used. They were divided to three groups, i.e., the control group (C) without any selenium supplementation, sodium selenite group (E1) and selenium lactate-protein complex group (E2). For four months, experimental goats received 0.43

mg of selenium per animal per day in diet; goats from the control group were given 0.15 mg of selenium per animal per day. At the beginning of the experiment, goats of all groups showed an average selenium concentration of 96  $\mu\text{g/l}$  in whole blood. On the parturition day, samples of first colostrum from goats and heparinized blood from goats and kids were taken. In the control group (C), average blood selenium concentrations of  $111.4 \pm 33.5 \mu\text{g/l}$  were observed on the parturition day. In both experimental groups, selenium concentrations were significantly higher ( $P < 0.05$ ). Average selenium concentration in the sodium selenite group (E1) was  $177.2 \pm 34.8 \mu\text{g/l}$  and in the group supplemented with selenium lactate-protein complex (E2)  $159.0 \pm 28.5 \mu\text{g/l}$ . Average glutathione peroxidase (GSH-Px) activity in blood of control goats (C) was  $581.9 \pm 99.2 \mu\text{kat/l}$ , in group E1  $154.6 \pm 156.2 \mu\text{kat/l}$  and in group E2  $1011.6 \pm 153.6 \mu\text{kat/l}$ . GSH-Px activity in experimental groups was significantly higher ( $P < 0.05$ ) as compared with the control group. Average selenium concentrations in colostrum was in the control group  $40.1 \pm 12.8 \mu\text{g/l}$ , in

E1  $99.0 \pm 29.9 \mu\text{g/l}$  and in group E2  $79.0 \pm 17.7 \mu\text{g/l}$ . Colostral selenium concentrations in experimental groups were significantly higher ( $P < 0.05$ ) as compared with the control group. No significant difference in the monitored parameters was found between experimental groups. In kids of control mothers (kC), average selenium concentrations in blood on the parturition day were  $62.4 \pm 22.9 \mu\text{g/l}$ ; kids of mothers supplemented with sodium selenite (kE1) showed average selenium levels of  $100.0 \pm 31.2 \mu\text{g/l}$ , and the average selenium concentration in kids of mothers receiving lactate-protein complex was  $83.4 \pm 20.1 \mu\text{g/l}$  (kE2). Average GSH-Px activity in control kids (kC) was  $402.1 \pm 153.9 \mu\text{kat/l}$ . Kids from kE1 showed average activity of GSH-Px  $806.1 \pm 254.9 \mu\text{kat/l}$  and kids from group kE2  $529.9 \pm 119.8 \mu\text{kat/l}$ . Statistically significant difference ( $P < 0.05$ ) was found only between kC and kE1 which showed significantly higher selenium concentration and GSH-Px activity. The results of this study confirm that both forms of selenium administered in experimental groups (i.e., sodium selenite and selenium lactate-protein complex) had similar biological

effect in goats. However, results obtained in kids indicate a better effect of supplementation with sodium selenite.

**Keywords:**

mother-kid relationship; trace element; glutathione peroxidase; colostrum; organic selenium; inorganic selenium

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