

Brief Communication

BLOOD SELENIUM IN A BEEF HERD AFFECTED WITH MUSCULAR DEGENERATION

In a Hereford herd in the middle of Sweden high mortality occurred in the calves in 1967 and 1968. Most frequent symptoms were respiratory distress and weakness. The diagnosis M.D. was established by postmortem examination. For this reason a study was made of the selenium content in forage, in blood and milk from cows and in blood from their offspring. The Se analyses were made by the method of *Lindberg* (1968).

RESULTS AND DISCUSSION

Blood and milk Se in samples collected in 1968 are shown in Table 1, Se content of the food is given in the legend. It is obvious that the Se values of blood and milk are very low. In a material of 13 healthy dairy cows in Västergötland mean blood Se was 45.7 ± 31.7 ng/ml (*Jönsson et al.* 1969). Sheep in herds where no M.D. occurred showed from 26 to 165 ng Se/ml (*Lindberg & Jacobsson* 1970). Blood from healthy adult horses showed 26.1 ± 12.7 (n = 10) and 25.8 ± 6.7 (n = 10) ng Se/ml (*Bergsten et al.* 1970), and blood from suckling foals in respective herds 34.3 ± 15.4 (n = 9) and 28.8 ± 6.1 (n = 5) ng/ml.

In an apparently normal dairy herd average milk Se was 6 ng/ml, and in a herd, where Se response had been obtained, 3 ng Se/ml was observed (*Andrews et al.* 1968).

Table 1. Selenium (ng/ml) in blood and milk of five Hereford cows and in blood of their suckling calves in 1968. Muscular degeneration was prevailing in the herd. The cows were fed hay (8.2 ng Se/g, mean of double determination) and silage (14 ng Se/g). Blood selenium of healthy dairy cows (n = 13), representing herds, was found to be 45.7 ± 31.7 ng/ml.

	Cow		Suckling calf
blood		milk	blood
	1.7	4.0	5.0
	4.2	5.0	8.0
	2.2	5.0	5.0
	2.1	5.0	6.0
	4.9	5.0	7.0

In 1968 six calves out of 42 died or were slaughtered, because they were sick. One died at the parturition, and one was slaughtered because of hernia. The remaining four calves were autopsied. Three showed extensive M.D., especially in the myocardium, whereas the fourth calf died from trauma.

In 1969 Se therapy was undertaken in cows and calves. Tokosel (Sodium selenite, 0.6 mg/g as Se⁴⁺, dl-alfa-tocopherol, 30 mg/g) was given intramuscularly to the cows in the last month before parturition. The treatment was repeated orally with Tokosel powder one week after parturition and one month thereafter. Tokosel was finally given intramuscularly to the calves when they were taken to grazing. The amount of Se administered each time corresponds roughly to 60 µg/kg of body weight. Altogether 58 calves were born in 1969. Until June three had died, two at the parturition and one due to coli septicemia.

Table 2. Selenium (ng/ml) in blood and milk of five Hereford cows and in blood of their suckling calves. Cows and calves were treated with vitamin E and selenium (see the text).

	Cow		Suckling calf
blood		milk	blood
27		13	33
48		14	30
22		17	61
34		20	47
19		10	43

Se values of blood and milk in 1969 are shown in Table 2. No essential changes in feeding have been done since 1968.

It appears that the Se of blood and milk had increased significantly since 1968. Since otherwise the conditions are the same — as far as can be controlled — as in 1968, it is probable that the increase is mainly due to the Se treatment. No deaths in M.D. occurred among the calves this year.

S. O. Jacobsson, S. Lidman and P. Lindberg

The Departments of Medicine II and Medicine I,
Royal Veterinary College,
Stockholm, Sweden.

REFERENCES

- Andrews, E. D., W. J. Hartley & A. B. Grant:* Selenium-responsive diseases of animals in New Zealand. *N. Z. vet. J.* 1968, *16*, 3—17.
- Bergsten, G., R. Holmbäck & P. Lindberg:* Blood selenium in naturally fed horses and the effect of selenium administration. *Acta vet. scand.* In press.
- Jönsson, G., P. Lindberg, G. Nordström & B. Pehrson:* Selenium content in whole blood and musculature in conjunction with parturient paresis and the downer syndrome in cows. *Acta vet. scand.* 1969, *10*, 104—105.
- Lindberg, P.:* Selenium determination in plant and animal material, and in water. *Acta vet. scand.* 1968, *9*, Suppl. 23.
- Lindberg, P. & S. O. Jacobsson:* Relationship between selenium content of forage, blood and organs of sheep, and lamb mortality rate. *Acta vet. scand.* 1970, *11*, 49—58.

(Received March 28, 1970).