

Effect of salt concentration in water on feed intake and growth rate of weaner Fallow deer

Y.J. Ru, M. Fischer, P.C. Glatz and Y.M. Bao

SARDI–Livestock Systems, Roseworthy Campus, Roseworthy, South Australia 5371

ru.yingjun@saugov.sa.gov.au

Southern and south–western Australia are a typical mediterranean environment with mild winters and hot, dry summers. In these regions, the evaporation rate is high in summer, resulting in saline drinking water for grazing animals. Apart from water, grazing animals also ingest salt from soil and forage. An excessive salt intake can reduce feed intake, increase water requirement, and depress growth and affect body composition as demonstrated in sheep (Peirce 1957). While the deer industry has been successfully developed in these regions, the potential impact of excessive salt intake on deer production is unknown. Salt tolerance has been well defined for sheep, cattle and other livestock but the variation between species, breeds within species, maturity status and the grazing environment makes it impossible to apply these values directly to deer. To optimise deer production and effectively use natural forage resources, it is essential to understand the tolerance of deer to the salt concentration in drinking water.

A total of 40 Fallow weaners were divided into 4 groups based on body weight. The average weights for each group were 22.0, 21.5, 22.3 and 23.2 kg. They were held in paddocks (500 m²) without any pasture and fed for 2 weeks on a pelleted diet including 27% lucerne meal, 30% oats, 34% lupins, 6% oaten hay, 1%

minerals and 2% molasses. From week 3, two groups of fallow deer were offered bore water (Na = 105 ppm), while the other two groups were offered water with a salt concentration increased every two weeks to 0.3, 0.6, 0.9, 1.2, 1.5, 2.0 and 2.5%. Feed intake and growth rate were measured weekly and water intake daily.

There was no difference in feed intake when salt concentration in the drinking water ranged from 0.3 to 1.2%, but it was reduced significantly when the concentration was greater than 1.5% (Figure 1). Water intake increased significantly with salt concentration increasing from 0.3 to 1.5%, and at 2.0% the water intakes of control and treatment groups did not differ significantly. At 2.5%, water intake was reduced by 32%. Body weight gain was not affected by up to 1.2% salt in water, but was reduced by over 60% with a further increase in concentration (Figure 2). The results indicate that weaner Fallow deer can tolerate salt concentrations up to 1.2% (equivalent to 5400 ppm Na) in drinking water.

Peirce, A.W. (1957). Studies on salt tolerance of sheep.

1. The tolerance of sheep for sodium chloride in the drinking water. *Australian Journal of Agricultural Research* 8,711–722.

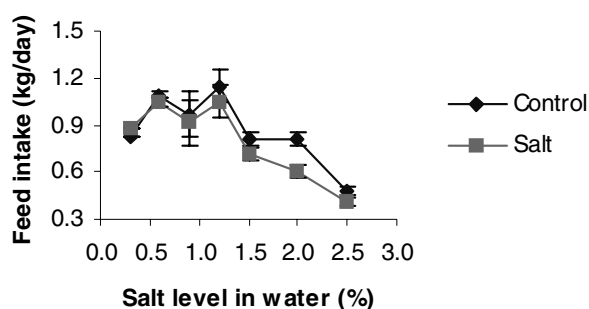


Figure 1 Feed intake of weaner Fallow deer drinking water with different salt contents (bar=standard error of means).

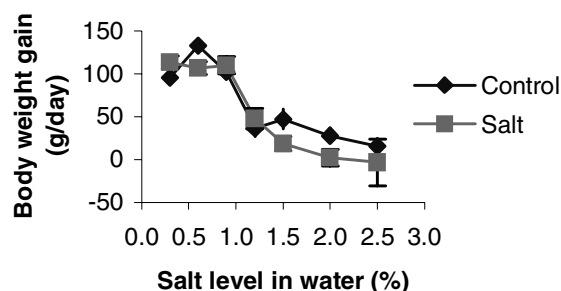


Figure 2 Body weight gain of weaner Fallow deer drinking water with different salt contents (bar=standard error of means).