

MAGNESIUM, POTASSIUM AND UREA METABOLISM FOLLOWING REHYDRATION OF HYDROPENIC GRAZING SHEEP

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The etiology of hypomagnesaemia has not been fully elucidated, but it is known to involve interrelationships between nitrogen, potassium and magnesium metabolism of ruminants grazing lush pastures (Fontenot et al. 1973).

Four merino ewes ( $39 \pm 2.1$  kg BW) of LK phenotype (Agar et al. 1972) were equipped as described by Godwin and Williams (1982) and sampled for blood every 2 hrs for 40 hrs. The animals were denied access to water for the first 20 hrs but thereafter water was available ad libitum. The animals drank heavily immediately access to water was allowed. Pertinent data is shown below.

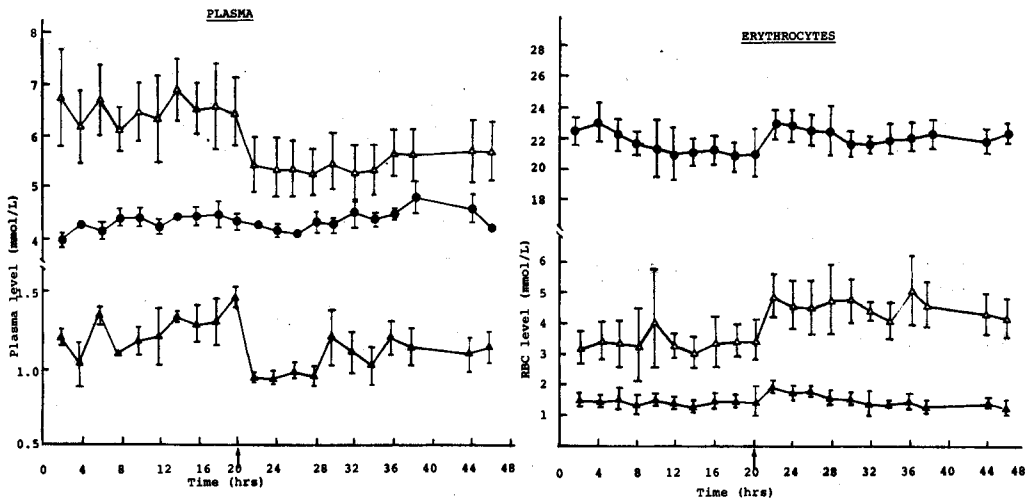


Fig.1. Plasma and erythrocyte levels of urea  $\Delta$ , K  $\bullet$ , and Mg  $\blacktriangle$ , before and after access to water. Arrows indicate time of access to water. (means  $\pm$  SEM).

A substantial drop in plasma Mg and urea levels was evident at the first sample following rehydration. Plasma K remained constant. The erythrocyte levels of Mg, urea and K all showed a significant rise. Plasma protein declined slightly but the reduction was not of sufficient magnitude to suggest that the above changes were a dilutional phenomenon.

Cell Mg and K are closely linked (Whang et al. 1981) and the urea content of cells relative to plasma varies in sheep depending on their metabolic and hydration status (Havassy et al. 1973).

It is suggested that following rehydration plasma Mg, K and urea transport into cells is increased and this may play a role in the etiology of hypomagnesaemia.

AGAR, N.S., EVANS, J.V. and ROBERTS, J. (1972) *Anim. Breed. Abstr.* 40: 407

FONTENOT, J.P., WISE, M.B. and WEBB, K.E. (1973) *Fedn Proc. Fedn Am. Socs. exp. Biol.* 32: 1925

GODWIN, I.R. and WILLIAMS, V.J. (1982) *Proc. Nutr. Soc. Aust.* 7: 203

HAVASSY, I., KUCHAR, S. and BODA, K. (1971) *Proc. 19th Wld Vet. Congr. (Mexico City)* 2: 573

WHANG, R., OEI, T.O., AIKAWA, J.K., RYAN, M.P., WATANABE, A., CHRYSANT, S.G. and FRYER, A. (1981) *Acta med. scand. suppl.* 647: 139