

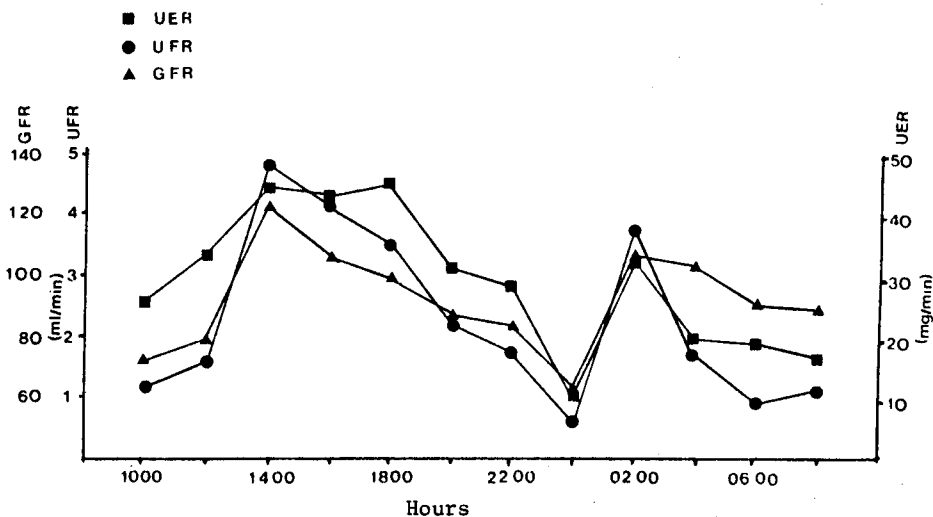
RENAL FUNCTION IN GRAZING SHEEP

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Sheep freely grazing high-quality pasture frequently have digestible N intakes in excess of 30 g N/d, yet plasma urea concentrations remain relatively constant at about 30 mg N/100 mL. Dietary electrolyte intakes of animals grazing green pastures, particularly K, can be well above requirements, yet animals can maintain homeostasis without drinking water (Brown and Lynch, 1972). The high water content of these pastures probably plays a role in enabling the animals to excrete the high dietary osmolar load.

This study investigated renal function in four crossbred ewes freely grazing a lush white clover - paspalum mixture. Drinking water was always available but intake was negligible. The animals were fitted with portable infusion pumps for intravenous infusion of ^{51}Cr EDTA and bladder catheters and bags for urine collection.

Blood samples and total urine outputs were measured at 2-h intervals for 24 h. Glomerular filtration rates (GFR), urine flow rates (UFR), and urea excretion rates (UER) for 1 sheep, typical of the other three, are illustrated below.



Plasma urea (mean 26.5 ± 0.57) and electrolyte concentrations remained relatively constant. Urine osmolalities were low (mean 782 ± 68.3) and UFRs high, indicating a substantial water diuresis. GFR was highly variable and determined the UFR. The quantities excreted of urea and electrolytes such as K (not presented) were a function of UFR.

It is concluded that in these circumstances the inevitable water diuresis is sufficient to maintain urea and electrolyte homeostasis.

BROWN, G.D. and LYNCH, J.J. (1972). *Aust. J. agric. Res.* 23: 669.