

THE INFLUENCE OF HAY ON THE DIGESTIBILITY OF PASTURE AND THE
RECOVERY OF FAECAL MARKER

G.A. ELDRIDGE* and C. KAT*

There is little information available on the extent and causes of the substitution of pasture by a supplement in the grazing situation because of the problems and errors usually associated with the estimation of pasture intake. Estimates of digestibility and faecal output are often used to determine pasture intake and interactions between pasture and supplement would certainly effect these determinations. The experiment reported was designed to study the effect that hay-pasture mixtures may have on the apparent digestibility of the diet and the recovery of Cr_2O_3 for the estimation of faecal output.

Five steers were used in a 5 x 5 latin square experiment with five hay-pasture mixtures (0:100; 25:75; 50:50; 75:25; 100:0) over 5 fourteen-day experimental periods. Fresh pasture was cut daily and the respective diets were fed twice daily to give a dry matter allowance of 10% of metabolic live weight ($\text{kg LW}^{0.75}$). The in vitro digestibility of the dietary components was determined by the method of Tilley and Terry (1963), while the in vivo digestibility of the diet was determined over the last five days of each experimental period. All steers were dosed twice daily with 10 g Cr_2O_3 , the recovery of which was estimated from samples taken from the rectum twice daily and from samples of approximately 5% of daily faecal output.

The mean ($\pm$ SD) in vitro digestibilities of the hay and pasture fed were 65.0 ± 4.0 and $74.7 \pm 3.6\%$ DOM respectively. The relationship between the in vivo digestibility of the diet and the hay and pasture components of the diet was linear without any apparent interaction between the components. It is described by the equation:-

$$\text{AD} = 1.000 \text{ HD} + 0.007 \text{ PD.P\%} - 0.007 \text{ HD.P\%} \quad (R^2 = .946; \text{RSD} = 1.08)$$

In this equation AD = in vivo digestibility of the diet, HD = in vivo digestibility of hay, PD = in vivo digestibility of pasture and P% = percent of pasture in the diet. The mean rates of recovery of Cr_2O_3 were $91.5 \pm 2.9\%$ and $92.3 \pm 2.3\%$ for rectal samples and samples from total collection respectively. Stepwise regression analysis indicated that the recovery of Cr_2O_3 was not affected by dietary components.

There was no evidence of any associative effect of hay and pasture on the in vivo digestibility of the diet nor is there any reason to believe that changes in hay quality would affect the efficiency of pasture digestion. Although the recovery of Cr_2O_3 was incomplete, the rate of recovery was consistent and was not affected by the digestibility of the diet or level of hay feeding, indicating that valid corrections could be made for incomplete recovery. Since the recovery of Cr_2O_3 was incomplete when estimated from total collection it could be assumed that Cr_2O_3 was lost during sample preparation for analysis as it is unlikely to be lost by absorption in the animal (Langlands 1975). It is suggested that any bias in the recovery of Cr_2O_3 should be determined from total recovery of faeces with penned or harnessed animals on each occasion that faecal output is to be estimated.

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*Animal Research Institute, Department of Agriculture, Werribee, Vic. 3030.