

VALIDATION OF ALKANE-PAIR TECHNIQUE FOR ESTIMATING INTAKE OF EQUIDS

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Reasons for study:

The alkane pair technique has been developed to measure grass intake of grazing animals. Its use has been validated in elephants, sheep, cattle, grazing dairy cows, kangaroos and wombats. Surprising though it may seem, there has been little published information on the amount of grass horses eat, with a mean dry matter intake of 2.5% of BW being assumed. Over 80% of horses in the UK are overweight and within this group a further 10-15% are considered to be clinically obese. This is of welfare concern as many diseases such as laminitis, equine metabolic syndrome and developmental diseases are associated with excessive weight gain.

Aims:

The aims of this study were two-fold.

1. To compare estimated dry matter intake (E-DMI) using the alkane pair technique with measured intake (M-DMI) determined using conventional gravimetric techniques in pen-fed donkeys and horses.
2. To determine optimal faecal sampling regimes and optimal dosing frequency in horses.



Methods:

Twelve mature male castrate donkeys (mean weight 153kg) were housed individually for 24 days and were fed poor quality hay ad libitum. After 12 days the animals were dosed twice daily at 08.00 and 16.00 with 5g alkane-labelled fibre. Daily DMI was measured during the final 7 days and a total faecal collection was made for the final five days. Twelve mature horses (228-496kg) were housed in individual stables and fed haylage (0.02 live weight as dry matter), offered as three meals per day at 08.00, 12.00 and 16.00. In order to determine the alkane-dosing regime that gave the most accurate E-DMI, two batches of Mini Weetabix® were produced, one heavily labelled (111mg of C32) and one lightly labelled (76mg of C32). Horses were randomly allocated to one of four groups; low dose, 2x/d; low dose, 3x/d; high dose, 2x/d; high dose, 3x/d for 13 days. Daily DMI of each animal was recorded for the final 7 days.

Results:

E-DMI based on C31 proved to be the most reliable for donkeys. There was no difference between alkane dosage levels or dosing frequency to measure E-DMI. Donkeys and horses had similar ($p > 0.05$) faecal recoveries of alkane to one another. Increasing the number of faecal samples increased precision.

Conclusion and practical significance:

The results indicate that the alkane pair technique provides a robust method for estimating DMI of equids provided that adequate faecal samples are pooled over a period of at least 5 days. Twice/thrice-daily dosing of even-chain alkane at low levels provided an accurate estimate of DMI.

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