THE USE OF NATURAL n-ALKANES IN MEDIC AND CLOVER AS INDIGESTIBLE MARKERS

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Considerable interest has been generated in the use of n-alkanes as indigestible markers for determining the feed intake of grazing sheep. Mayes et al. (1986) stated that "the use of these markers is dependant upon the faecal recovery of these alkanes being known and universally constant". We investigated the possible use of natural alkanes as indigestible markers as part of a grazing experiment examining the nutritive value of new pasture legumes.

Pasture from three commercial medicas (Circle Valley, Serena and Paraggio) and one subterranean clover (Dalkeith) was collected, dried and fed to 16 sheep (4 per pasture type). Feed and faeces were analysed for alkane content and % recovery determined (Fig. 1).

Although the digestibility (75.5%) of the pastures was not significantly different (P>0.05), recovery of the different n-alkanes varied with pasture type and chain length and there was a significant quadratic relationship (r^2=0.985) (Fig. 2) between chain length and recovery for the medic cultivars, but not for Dalkeith.

Alkanes of chain length C29–C31 were detected in feed and faeces, but only C29 and C31 were found in quantitative amounts (>50 ug/g). The ratio of these two alkanes differed between the medicas and the subterranean clover, with the predominant alkane being C31 in medicas (P<0.05) and C29 in Dalkeith. Leaf material contained significantly (P<0.05) higher levels of alkane than stem.

Feed intake was calculated using faecal output results obtained from slow release chromic oxide capsules and the recovery figures obtained for C29 and C31 for each pasture. The calculated intakes varied considerably between days and animals, indicating that use of natural n-alkanes as indigestible markers in the field may be unreliable and time consuming due to the apparent need for calibration for each pasture plant/species encountered.


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