

The effect of drying treatment on the n-alkane analysis

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N-alkane analysis use to be performed on freeze-dried samples. Sample preparation for routine analysis would be simplified if freeze-drying could be replaced by oven-drying. In early work oven-drying was found to reduce the alkane concentration measured in some plant species (Dove and Mayes, 1991, Aust J Agric Res, 42, 913-52). There are not enough information about the effect of different drying treatments on alkane extraction and alkane concentration estimated in faeces and herbage samples.

Faeces samples (n = 55) of cows dosed with C24, C32 and C36 and lucerne hay samples (n = 33) were prepared for the alkane analysis by two procedures : freeze-drying or oven-drying at 40°C for 24 h (herbage) or 48 h (faeces) to avoid any evaporative loss of alkanes. Samples were extracted by duplicate. Alkane analysis was performed as described by Oliván and Osoro (in this volume).

Alkane concentration was higher in freeze-dried than oven-dried samples (Table), the

difference being significant for shorter chain alkanes (from C24 to C28 in faeces, from C25 to C30 in herbage). Longer chain alkanes concentration (from C31 to C36) was only slightly higher when freeze-drying, being the mean discrepancy between the alkane content measured by both drying treatments lower than 3 % in both type of samples. This percentage of discrepancy was similar to that observed between the two replicates of each sample.

Good estimation of C32, C33 and C36 alkanes concentration can be achieved from 40°C oven-dried faeces and herbage (lucerne hay) samples. Therefore oven-drying would not affect on the estimation of herbage intake and digestibility, being an easier procedure than freeze-drying.

However, diet composition studies, estimated from a wide range of alkanes (from C21 to C35) in faeces and herbage samples should require freeze-drying.

Alkanes concentration (mg/kg DM)	Faeces n = 55			Herbage n = 33		
	Freeze-dried	Oven-dried	sign.	Freeze-dried	Oven-dried	sign.
C24	298.4	270.2	*	—	—	—
C25	10.8	9.3	***	6.3	5.5	**
C26	6.0	5.0	***	3.0	2.2	***
C27	54.6	50.4	***	29.3	25.3	**
C28	29.1	27.1	***	12.5	10.8	***
C29	331.1	320.9	NS	153.7	134.6	***
C30	45.5	45.5	NS	22.7	20.8	*
C31	1084.4	1057.7	NS	629.0	626.0	NS
C32	460.1	450.1	NS	21.0	20.8	NS
C33	113.9	111.9	NS	61.9	60.9	NS
C35	5.6	5.6	NS	2.7	2.3	NS
C36	398.4	389.3	NS	—	—	—