

## PARTITION OF NUTRIENTS IN PREGNANT EWES

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Effects of diet and stage of pregnancy on nutrient utilisation by ewes are ill-defined. We have studied whole body turnover of nutrients and partition of nutrients between leg muscle and uterine tissue in pregnant ewes fed a range of diets designed to simulate grazing conditions.

Three groups, each of 12 Merino ewes, were fed either chaffed oats hay (OH), lucerne chaff (L) or a mixture of OH and L in the proportions of 50:50 (OH:L). These diets contained 7.9, 8.6 and 8.2 MJ ME/kg and 11, 33 and 21 g N/kg respectively. Studies were made at 90 and 130 days of pregnancy on different groups of six ewes fed each diet, using procedures described previously (Gooden et al. 1980; Oddy and Jones 1980; Oddy et al. 1981).

Mean feed intake (g DM/d), liveweight (kg), blood flow (ml/min/kg), O<sub>2</sub> uptake and CO<sub>2</sub> output (μmoles/min/kg), total CO<sub>2</sub> entry (mmoles/min), and the proportion of total CO<sub>2</sub> entry accounted for by the uterus (%) are shown in the following table. (No. of observations in brackets.)

Diet	OH		OH:L		L	
	90	130	90	130	90	130
Days pregnant						
Feed intake	540 (4)	387 (6)	729 (4)	509 (6)	1093 (5)	1327 (5)
Liveweight	43.8 (4)	44.8 (6)	53.4 (4)	55.8 (6)	56.9 (5)	63.3 (5)
Blood - leg	50 (3)	80 (4)	92 (3)	84 (6)	103 (4)	97 (5)
flow - uterus	300 (3)	229 (6)	404 (1)	262 (6)	431 (5)	243 (5)
O <sub>2</sub> - leg	141 (3)	230 (4)	276 (3)	183 (6)	233 (4)	266 (5)
uptake - uterus	416 (3)	475 (6)	-	377 (6)	514 (5)	319 (5)
CO <sub>2</sub> - leg	168 (3)	216 (4)	298 (3)	223 (6)	261 (4)	254 (5)
output - uterus	589 (3)	532 (6)	-	574 (6)	609 (5)	504 (5)
CO <sub>2</sub> entry	12.7 (4)	13.8 (3)	15.9 (4)	19.5 (6)	22.3 (5)	34.9 (5)
CO <sub>2</sub> uterus	9.2 (3)	18.8 (3)	7.5 (1)	14.9 (6)	6.0 (5)	7.0 (5)
CO <sub>2</sub> total						

Differences between parameters measured which were significant were as follows: Blood flow from the leg (L>OH, P<0.05) and from the uterus (90>130 days, P<0.01) and CO<sub>2</sub> output from the leg (L>OH, P<0.05). Total uterine blood flow increased from 700 to 1150 ml/min due to increased uterine mass between 90 and 130 days of pregnancy. The proportion of total CO<sub>2</sub> entry derived from oxidation in the uterus decreased as diet quality improved and increased as pregnancy progressed.

The results show that, despite marked differences in diet and stage of pregnancy, the oxidative metabolism of the uterus (per unit weight) remains relatively constant, apparent increases reflecting increased uterine mass.

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