



Effect of imbalance between energy and nitrogen supplies on microbial protein synthesis in growing double-muscléd Belgian Blue bulls

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The message

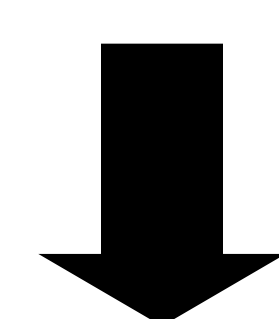
Do we have to balance closely the energy and nitrogen supplies for the rumen microbes in the diet of growing bulls ?

No, we don't ! As long as the nutrient supply is balanced on a 24 or 48-h basis, the ruminants and their microbes can overcome or minimise the effect of a lack of synchronisation.

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Objective

Effect of three time periods of imbalance between energy and nitrogen supplies for the rumen microbes on microbial protein synthesis



by giving the same feedstuffs according to different feeding patterns

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Methods

Feeding patterns	Feedstuffs		RDN:FOM	Time periods of imbalance
	Energy	Nitrogen		
Control	0830	+	24 g/kg	0 h
	2030	+	24 g/kg	
1	0830	+	19 g/kg	12 h
	2030	-	29 g/kg	
2	d 1	+	19 g/kg	24 h
	d 2	-	29 g/kg	

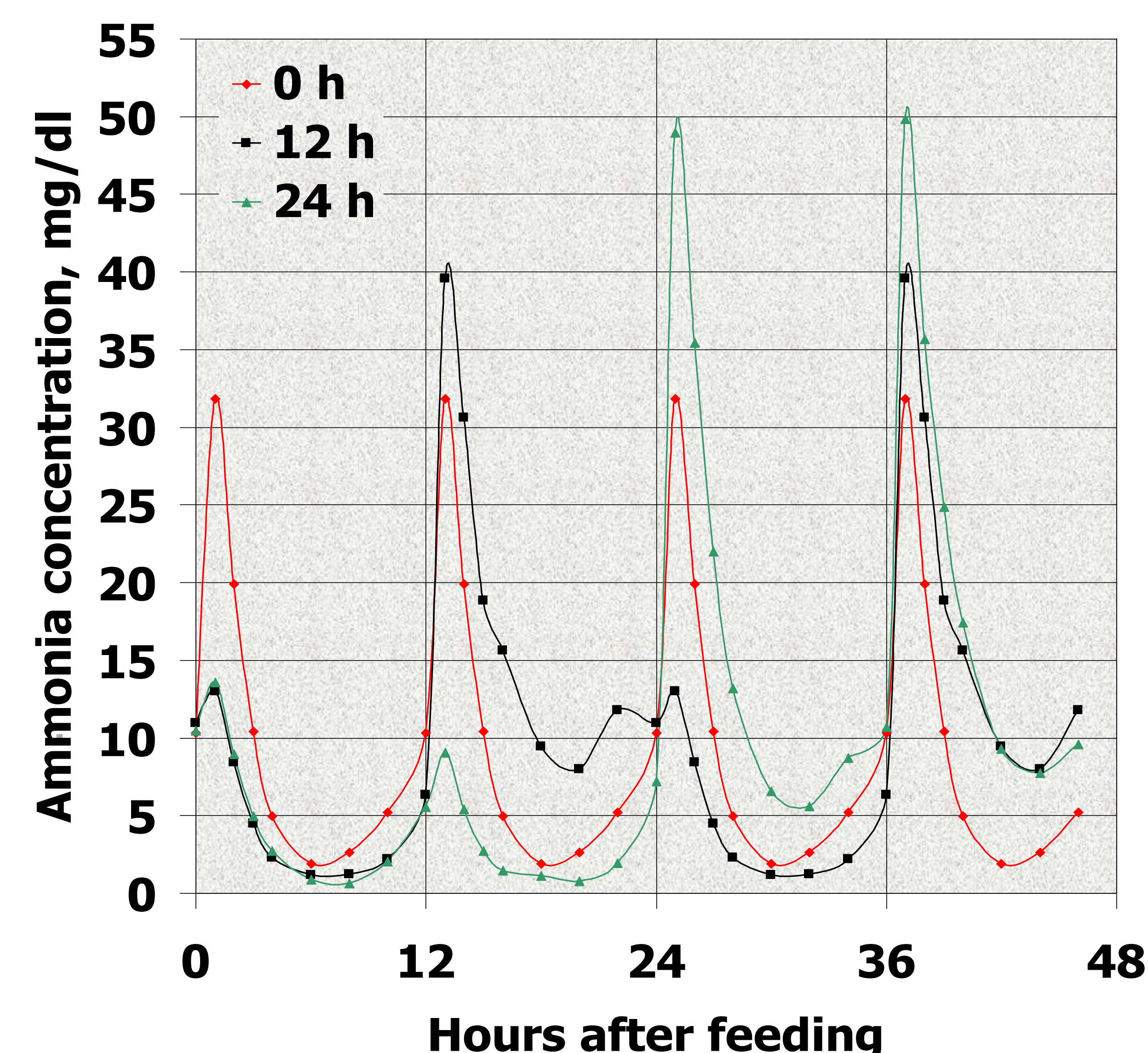
+ : fed ; - : not fed.

Experimental design: 6 bulls allocated to 3 treatment periods in a cross-over design.

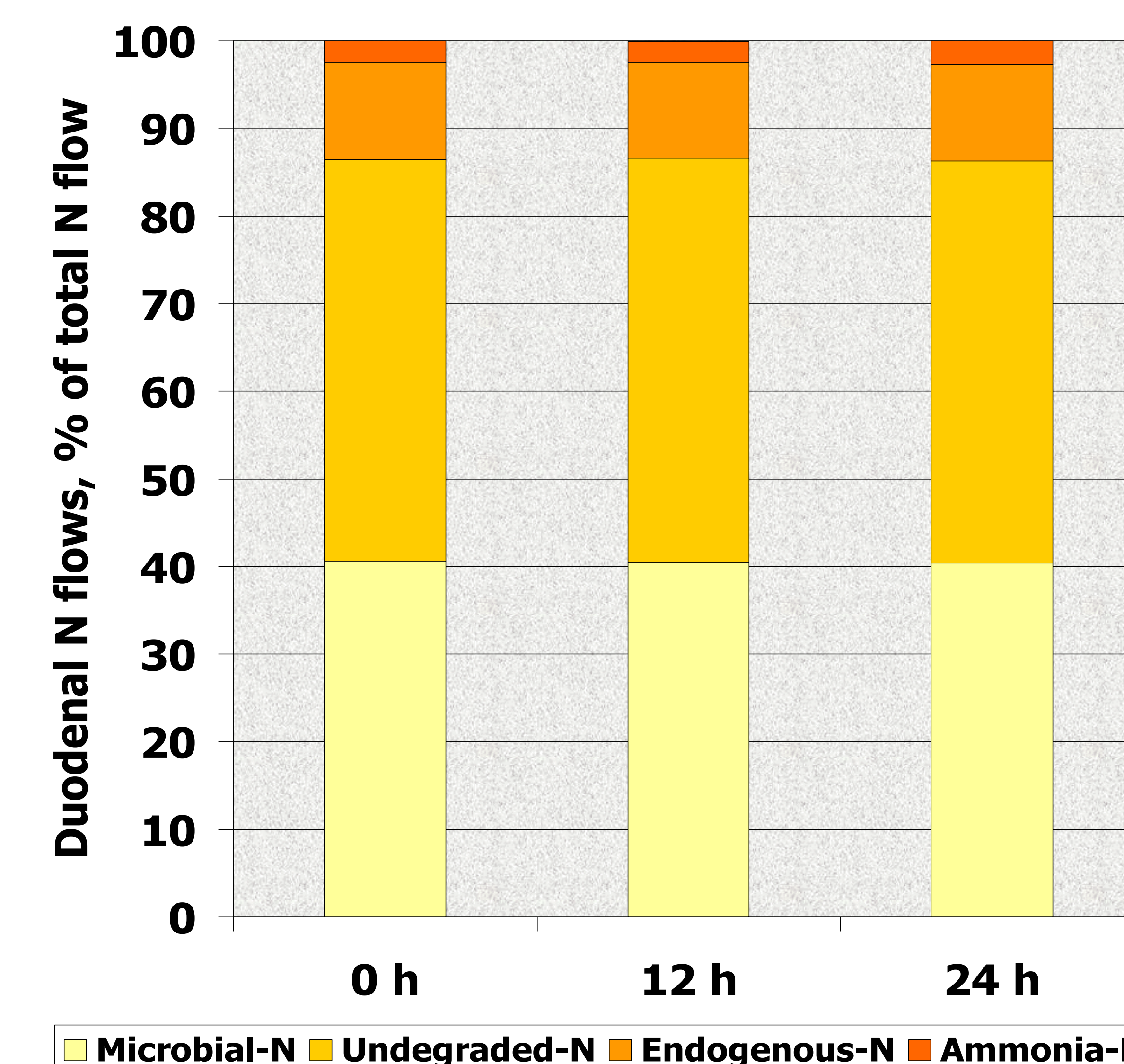
Measurements: - pH and ammonia concentration in the rumen;
- total digesta and microbial protein flows at the duodenum.

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Results



Ruminal ammonia concentration highly influenced by the feeding pattern



Partition of total N flow at the duodenum not affected by the feeding pattern

Item	Time periods of imbalance			SEM	P
	0 h	12 h	24 h		
OMADR ¹	2683	2561	2420	190	0.71
EMPS ²	27.9	31.5	29.1	2.9	0.69

¹OMADR: OM apparently digested in the rumen (g/j),

²EMPS: Efficiency of microbial protein synthesis (g N/kg OMADR).

No significant differences between the efficiencies of microbial protein synthesis

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Conclusions

A lack of synchronisation between the supply of nitrogen and energy-yielding substrates to rumen micro-organisms is not prejudicial to their growth as long as the nutrient supply in the rumen is balanced on a 24 or 48-h basis.