



Voluntary intake and feeding behaviour in relation to digestive function and body composition in normal and double-muscled Belgian-Blue young bulls

René Baumont, F Dehareng, J Jamot, A Détour, Rt Jailler, Rd Jailler, Y Geay, Ag Deswysen

► To cite this version:

René Baumont, F Dehareng, J Jamot, A Détour, Rt Jailler, et al.. Voluntary intake and feeding behaviour in relation to digestive function and body composition in normal and double-muscled Belgian-Blue young bulls. *Annales de zootechnie*, 1995, 44 (Suppl1), pp.267-267. hal-00889426

HAL Id: hal-00889426

<https://hal.science/hal-00889426>

Submitted on 11 May 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Voluntary intake and feeding behaviour in relation to digestive function and body composition in normal and double-muscd Belgian-Blue young bulls

R Baumont ¹, F Dehareng ³, J Jamot ¹, A Détour ¹, Rt Jailler ²,
Rd Jailler ², Y Geay ², AG Deswysen ³

¹INRA Station de Recherches sur la Nutrition des Herbivores ; ²INRA Laboratoire Croissance et Métabolismes des Herbivores, 63122 St-Genès-Champagnelle, France ; ³UCL Faculté des Sciences Agronomiques, Unité de Génétique, 1348 Louvain-la-Neuve, Belgique

Double-muscd Belgian-Blue bulls are known to have lower voluntary intake (VI) and better feed conversion ratio than normal bulls (Hanset *et al*, 1987, Génét Sél Evol, 19, 2, 225-248). The low VI of double-muscd animals was analysed through feeding behaviour, digestive function and body composition.

Six normal (N) and 6 double-muscd (D) young bulls were compared at 9 months of age (270 kg). Bulls received 40 g DM/kg BW^{0.75} of pelleted concentrate (57.5 % maize) and grass hay (58.6 % NDF) *ad libitum* (10 % refusals). Hay and concentrate were fed in two equal portions at 9 am and 15 pm for hay, and at 10 am and 16 pm for concentrate. After 2 weeks of adaptation, VI, kinetics of intake and jaw movements were recorded over 5 days (Baumont *et al*, 1990, J Agric Sci, 115, 277-284). Afterwards, the bulls were fed at 95 % of the determined VI with 50/50 % hay/concentrate ratio. Digestibility, nitrogen retention and retention times of Eu-labelled hay and Yb-labelled concentrate particles were measured over 10 days during which feeding behaviour was recorded over 5 days. Then, energy expenditure was measured by indirect calorimetry (7 days, Vermorel *et al*, 1994, Proc XIIIth Symp on Energy Metabolism, EAAP publ 76). Bulls were slaughtered 4 or 6 days later on.

VI in D bulls was 10 % lower than in N bulls and was associated with a lower rate of intake (RI) and a higher number of meals. RI in D bulls was significantly lower during both hay meals following distributions (14.3 vs 17.0 g DM/min, P = 0.013) and during concentrate meal at 10 am (77.1 vs 95.7 g DM/min, P = 0.041). Differences in feeding behaviour were similar during digestibility period. Dry-matter digestibility was similar in N and D bulls (69.6 %), as also total retention time of hay (48.7 h) and concentrate (32.0 h). Empty weight of digestive tract (47.3 vs 56.8 g/kg empty BW, P = 0.001) and rumen (15.6 vs 18.3 g/kg empty BW, P = 0.003) were lower in D bulls.

These preliminary results show that lower VI in D bulls is related to a lower motivation to eat (lower RI) which might be explained by lower energy gains (24.8 vs 49.3 kcal/d/kg BW^{0.75}, P = 0.0004) due to slightly higher protein accretion (81.2 vs 72.8 % muscles in the carcass, P = 0.003) but much lower lipid gains (4.4 vs 9.9 % adipose tissues, P = 0.007). In addition, physical limitation of hay intake should be more effective in D bulls which have a reduced rumen size and therefore tend to increase daily number of meals.

	N	D	P value*
Voluntary Intake (g DM/kg BW ^{0.75} /d)	88.6	79.6	0.005
Hay intake (g DM/kg BW ^{0.75} /d)	47.4	40.5	< 0.001
Rate of intake (g DM/min/d)	22.7	19.6	0.025
Number of meals (/d)	11.0	12.7	0.080

* : "genotype" effect in the analysis of variance.