Effects of different dietary protein content on "*in vita*" performances and carcass characteristics of Friesian bulls.

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OBJECTIVE

Ammonium excretion represents one of the most important problems in intensive beef cattle livestock that are heavily implicated in the emission of ammonia, as well as of other gases and particulates, to the atmosphere and, consequently, in environmental pollution. Until now, research work has mainly considered the restriction of dietary protein content as a solution to reduce nitrogen output. The present study has the aim to analyse the effect of two diets different only for dietary protein levels (usual: about 14% *vs* high: 18% of DM), on *in vita* animal performances and carcass characteristics evaluating, contemporarily, the possibility to reduce the length of the growing and finishing period without undesirable consequences on carcass and meat production.

MATERIAL AND METHODS

The study was carried out on 15 Friesian young bulls divided in two experimental groups fed on two diets (Table 1); both diets were calculated to maintain a forage/concentrate ratio of 40-44%, but had two different dietary protein contents (DPC): about 14% (A Group) and about 18% (B Group), on dry matter. The bulls were weighted every 20 days in order to follow the growth trend and calculate the ADG (average daily gain). Bulls were then slaughtered at about 534Kg of body weight (BW); on the carcasses the following parameters were evaluated: conformation (SEUROP), weights, yields and measurements (Table 2). Data were analyzed using the GLM procedures of S.A.S. (S.A.S., 1989).

RESULTS

During all the trial A Group ingested less dry matter than B Group (9,8 Kg/d for 224 days *vs* 10,9 Kg/d for 211 d.). The very high content of DPC, mainly for B, does not much influenced growth trends, average weight values or ADG; the difference on the times to reach slaughtering weights was also limited (about 2 weeks); figure 1 shows that A Group had a significant slower trend only in the first period of the trial. Carcass characteristics were very similar in both groups (Table 2), showing that protein levels do not affected animal performances.

Table 1: Composition of the experimental diets.*

Ingredients	Diets	
	Group A	Group B
Alfalfa Hay	29.54	27.55
Maize Silage	12.53	13.30
Maize grain	20.10	19.28
Barley grain	20.10	20.43
Proteinic Supplement (33% PG)	15.70	19.44
*UFV **(Kg)*	0.90	0.90

* percentage on dry matter basis **unité fourragères viande

Figure 1 Growth Trend

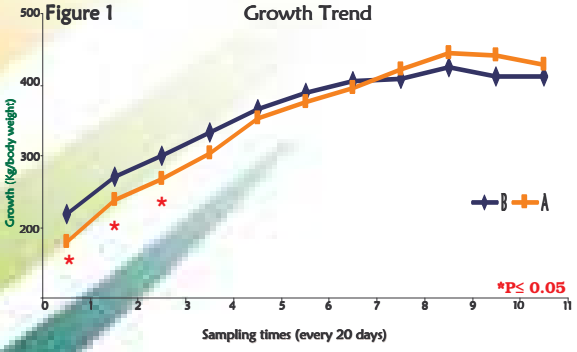

Table 2. Carcass characteristics.

CARCASS PARAMETERS				
Measurements	Group A	Group B	Mean	RMSE
N	7	8	15	
Carcass conformation	R-	O	-	-
Carcass fatness	2+	2+	-	-
Carcass length, cm	131.71	131.50	131.60	3.512
Thoracic depth, cm	48.50	48.28	48.38	2.019
Leg length, cm	66.35	75.18	71.06	18.603
Leg Maximum width, cm	24.78	25.50	25.16	1.157
Thigh minimum width, cm	24.28	24.43	24.36	0.966
Carcass weight, Kg	294.67	292.32	293.42	8.523
Net dressing, %	55.59	54.35	54.93	1.548

RMSE: Root Mean Square Error

CONCLUSIONS

Results show that high dietary protein content had a quite negligible effect on *in vita* animal performances and/or on carcass characteristics. Moreover the difference on feeding length, and so on manure producing time, resulted too small to compensate high levels of dietary protein in finishing Friesian bulls.

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