

Influence of dietary crude protein content and source on Frisian young bulls performances and meat quality

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Objective

The aim of this study was to evaluate the effect of dietary crude protein on *in vivo* performances, slaughter/dissection performances and meat quality.

Methods

The Study was carried out on 27 Frisian young bulls, divided into three groups and fed with 3 different diets.



DIETS

Chickpea Group

10 animals
CP% = 15.61-11.34
UFV/kg = 0.97

Broad bean Group

10 animals
CP% = 15.23-11.34
UFV/kg = 0.97

Control Group

7 Animals
CP% = 15.42
UFV/kg = 0.97



In vivo and slaughter performances

Live weights had been recorded every 20 days in order to calculate growth curves. Bulls were slaughtered at about 544 kg of body weight. Carcass weights, carcass yields were evaluated.



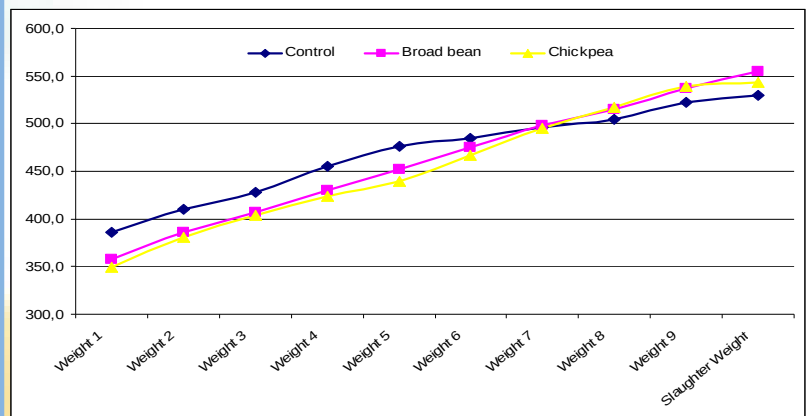
Meat quality

Colour, pH, shear force on cooked meat (WBS) and water losses (Drip loss – DL; Cooking loss – CL) were performed on *Longissimus Thoracis* (10th-11th ribs) after 7 days of ageing time.

RESULTS

No differences were found on *in vivo* performances (ADG: C = 1.16 kg/d; Cg = 0.97 kg/d; Bg = 1.02 kg/d)

Growth curves



Slaughter and dissection performances

a, b: P ≤ 0.05		n	Control 7	Chickpea 10	Broad bean 10	Mean 37	RMSE
Live weight	Kg		529.93 b	543.20 ab	555.30 a	544.24	14.662
Carcass weight	Kg		294.67 b	300.07 ab	308.18 a	301.67	9.327
Dressing	%		55.59	55.26	55.49	55.43	1.372
Conformation Score			7.00 (R-)	6.70 (R-)	6.75 (R-)	6.80	1.539
Fat score			5.71 (2+) a	4.36 (2-) b	3.76 (2-) b	4.49	1.297
Lean meat	%		62.94 a	59.39 b	60.02 ab	60.58	3.549
Bone	%		21.02 b	28.99 a	27.61 a	26.38	2.112
Fat	%		13.79 a	10.06 b	10.46 b	11.24	2.788

Crude protein content and source influenced both some slaughter performances and some meat quality traits. Statistical differences were found on carcass weight, fat score, lean meat, bone and fat percentage, pH, water losses, WBS, Lightness, Redness index and Hue values.

Meat quality parameters

a, b: P ≤ 0.05		n	Control 7	Chickpea 10	Broad bean 10	Mean 37	RMSE
pH			5.91 a	5.67 b	5.63 b	5.71	0.178
WHCr	%		2.12 a	0.78 b	0.89 b	1.17	0.433
WHCc	%		20.05 b	24.64 a	26.89 a	24.29	3.807
WBS	kg		5.19 b	6.14 b	7.95 a	6.67	1.409
L			36.50	35.04	35.51	35.59	3.468
a			8.17 b	10.90 a	10.74 ab	10.13	2.660
b			10.68	11.36	11.3 6	11.18	2.577
C			13.48	15.76	15.68	15.14	3.545
H			52.04 a	46.37 b	47.20 b	48.15	4.197

Conclusions

Although there are some differences among the three experimental groups, broad bean and chickpea allow good A.D.G. and good level of meat quality. Alternative protein feeds represent very good feedstuffs to replace soy bean, in particular in organic farming systems.