The effect of castration at 10 months of age on growth physiology of Serrana de Teruel cattle breed

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OBJECTIVE

To compare performance and peripheral IGF-I concentration of steers and bulls from 10 (surgical castration) to 21 months old (slaughter), with the aim of studding IGF-I functions as nutritional status indicator and/or growth response mediator to endogenous estrogens and androgens.

MATERIAL AND METHODS

- 14 male calves managed under a feeding programme divided in 3 phases:

I) 10-13 months: ad lib concentrate (93% DM, 11.7 MJME/kg DM) + ad lib straw

II) 14-18 months: 3 kg concentrate + ad lib barley silage (38% DM, 9.5 MJ ME/kg DM)

III) 19-21 months: ad lib concentrate + ad lib straw

- Measurements: feed intake daily on a group basis and individual live-weights (LW) weekly

- Blood samples monthly to analyze IGF-I concentration by a commercial kit (CIA)

RESULTS (a, b indicate significances differences (P<0.05))

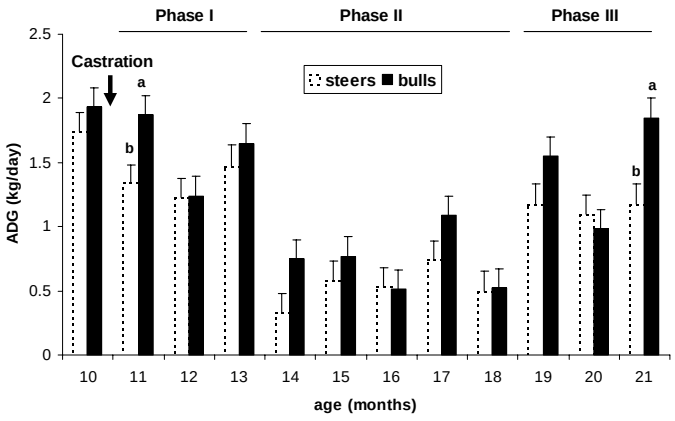
Dry matter intake (DM) during the 3 feeding phases

	PHENOTYPE		FEEDING PERIOD			Effects	
	STEERS	BULLS	I	II	III	Phenotype	Period
Kg DM/day	7.95	8.04	7.55	8.35	8.09	NS	NS
g DM/kg $LW^{0.75}$/day	74	71	79a	75ab	64b	NS	*

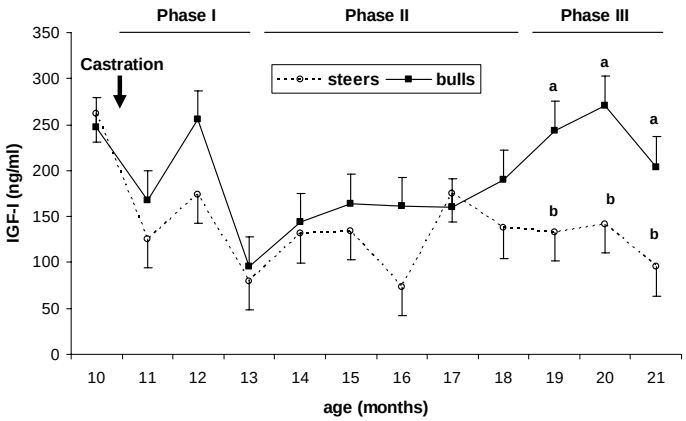
Animal live-weights (kg) from 10 to 21 months of age

	STEERS	BULLS	Effect
LW start of phase I	384	400	NS
LW start of phase II	466	487	NS
LW start of phase III	552	623	*
Slaughter	648	743	**

Monthly average daily gains (ADG) in steers and bulls



Plasma insulin-like growth factor-I (IGF-I) concentration



CONCLUSIONS

Steers grew slowly and had lower plasma IGF-I concentration than bulls, being these differences mainly highlighted from 19 to 21 months of age. This response might be related to attainment of puberty, and suggests that IGF-I played a role in mediating gonadal rather than nutritional status.

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