

Serum IGF-1, leptin and growth in early and traditionally weaned beef calves



Blanco M¹., Villalba, D²., Sauerwein, H³., Casasús I¹.

¹ Centro de Investigación y Tecnología Agroalimentaria, Zaragoza, Spain

² ETSEA, Universitat de Lleida, Lleida, Spain

³ ITW, University of Bonn, Bonn, Germany



Early weaning has been proposed as a cost-effective management strategy in areas with feed shortage. Modifying age at weaning, however, modifies the nutritional status of the calf, which could affect growth and serum IGF-1 and leptin concentrations

Objective: determine the effect of age at weaning on serum IGF-1, leptin and their relations with growth

Material and Methods

16 Parda de Montaña spring-born calves



Early Weaned (EW)
Traditionally Weaned (TW)

	0-90 d	90-180 d	180-365 d
Early Weaned (EW)	Indoors with dam + concentrates	Concentrates	Concentrates
Traditionally Weaned (TW)	Indoors with dam	High mountain ranges with dam	Concentrates

Slaughter weight: 500 kg

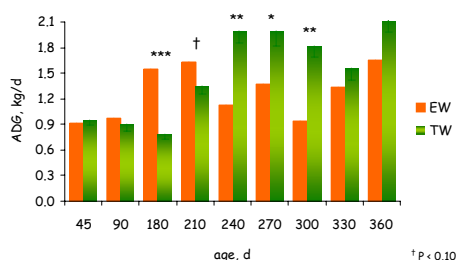
weaning



- Weekly weights, except during the grazing season → monthly average daily gain (ADG)
- Blood samples at 45, 90, 180, 210, 240, 270, 300, 330 and 360 d to obtain serum for:
 - IGF-I determination with a commercial kit
 - leptin determination with a competitive multispecies EIA
- 1 steak from L. thoracis muscle for intramuscular (IM) fat quantification with an Ankom extractor

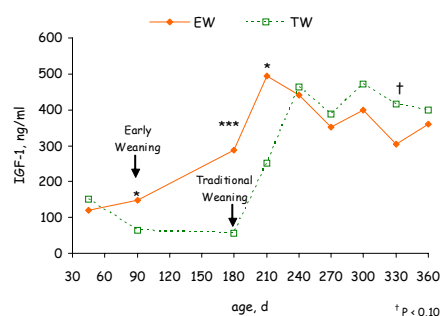
Results

Age at weaning affected weight gains, IGF-1 and leptin concentrations



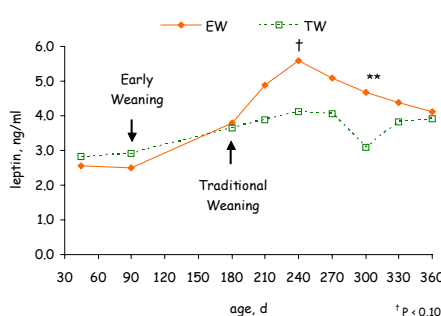
Maximum growth:

- EW: 180 - 210 d
- TW: 240 - 300 d



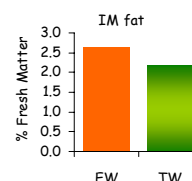
IGF-1 concentrations

- EW: increased sharply after weaning and peaked at 210 d
- TW: decreased during lactation in mountain ranges, increased after weaning and peaked at 240 d



Leptin concentrations

- EW: increased after weaning and peaked at 240 d
- TW: barely changed



IM fat

- similar
- Correlated with leptin at slaughter ($r = 0.72$, $P < 0.01$)

Correlations

	IGF-I	Leptin
Weight	$r = 0.67^{***}$	$r = 0.52^{***}$
AGD	$r = 0.59^{***}$	
IGF-I		$r = 0.42^{**}$ §

§ In EW calves only

Conclusions

- Age at weaning affected both serum IGF-I and leptin concentrations, which were correlated with weight
- Leptin at slaughter could be used to predict IM fat in Parda de Montaña calves slaughtered at 500 kg