

The effects of HGP implants on growth and meat quality characteristics in beef cattle

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Introduction

Hormonal growth promotants (HGP's) are widely used in the Australian beef industry as a means of increasing productivity. HGP's increase growth rate usually by 10-30 %, and improve feed conversion efficiency. However concerns have been raised about possible undesirable effects on meat quality. With the introduction of the Meat Standards Australia (MSA) beef grading system designed to indicate eating quality, a need has developed to account for the effects of HGP's. Accordingly two experiments have been undertaken to investigate and quantify the effects of HGP's.

The first focused on young steers and heifers lot-fed for 2-3 months destined for the domestic market. Animals that received no HGP implants were compared with those that were implanted at the start of the feeding period. The second experiment investigated the effects of timing and repeat HGP implant on eating quality of 18 - 20 month old steers finished on pasture.

Aim

To quantify the effect of HGP implantation on palatability

Hypotheses

1. Growth promotants will have a deleterious effect on meat quality as assessed by consumer taste panels, marbling, ossification, rib fat and pH.
2. Different types of growth promotants will have similar effects on meat quality
3. The effects will be similar in heifers and steers when treated with the recommended hormonal combination.

First Experiment

- Undertake feedlot experiment comprising 40 steers and 40 heifers with the following treatments
 - (i) Steers - No implant
 - (ii) Heifers - No implant
 - (iii) Steers - Revalor S (24mg oestradiol, 120mg trenbolone acetate)
 - (iv) Heifers - Revalor H (14mg oestradiol, 140mg trenbolone acetate)

- Feed animals a concentrate ration and slaughter after 70 days on feed
- Record live weight and fat depth during feeding
- At slaughter record carcass weight P8 fat depth, dentition ossification ultimate pH, marbling eye muscle area, meat and fat colour.
- Samples of the striploin, blade and outside flat cuts will be removed and consigned to MSA for MSA consumer taste evaluations. Samples of these cuts will be removed from both sides of the carcass so that the same anatomical section can be compared at the two ageing times. Samples from both sides of the carcass will be equally represented in each ageing period. Further samples of the striploin will be taken for shear force, tension, myofibrillar fragmentation index and intramuscular fat measurements.
- Tails from all animals will be collected for measurements of bone density using DEXA and ash and calcium content
- Striploin portions will be aged at 1°C for either 5 or 14 days before freezing for later meat quality evaluations. Other samples (blade and outside flat) will be aged for 5 days.

This experiment will investigate the effects of repeated HGP implants on eating quality of 18 - 20 month old steers finished on pasture or in a feedlot.

Results

The results of the eating quality, as tested by the MSA taste panels, two cuts are presented in Table 1. There was no sex effect in the eating quality tests so the data have been pooled across sex.

Treatment	Striploin		Rump	
Ageing time (days)	5	21	5	21
Control	48.0	55.4	53.4	58.7
Revalor	32.9	49.8	50.8	55.3

The eating quality data shows the HGP implant had a bigger effect on the Striploin cut than the rump and that the eating quality improved with ageing.

