MEAT & LIVESTOCK AUSTRALIA

TIPS & TOOLS

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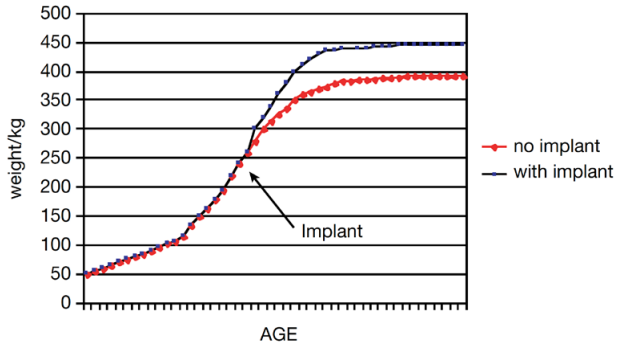
The effect of Hormonal Growth Promotants (HGPs) on beef eating quality

What are growth promotants?

Hormonal growth promotants (HGPs) registered for cattle are pellets that are implanted under the skin of the ear. HGPs play a vital role in delivering the required productivity gains in various sectors of the beef supply chain through increased weight gain and improved feed conversion efficiency.

HGPs contain synthetic forms of oestradiol, progesterone and/or testosterone as the active ingredient. Their action is anabolic, that is, they increase nitrogen retention and protein deposition in animals. These compounds occur naturally in untreated animals; treatment simply increases the concentration and metabolic effect. The well-proven effects of HGPs are heavier weights for age, a reduction in marbling at a constant carcase weight, or an increase in carcase weight at constant fat levels. A plentiful supply of good quality feed must be available to achieve this growth response.



The effect of using anabolic implants on growth

What is the impact on eating quality?

MSA research has established that HGPs may have an effect on the eating quality of some cuts. The effect differs between muscles and is reduced with cut ageing. The striploin and cube roll are worst affected, the rump and topside intermediate, and other cuts are less affected.

Key points

- HGPs can have an adverse effect on eating quality.
- The effect varies across different musclesand accounts for a minimum 5-unit MSA Index difference between HGP-treated and non-treated carcases.
- The effect can be managed utilising other MSA pathways, eg ageing and or tenderstretching.
- Cattle treated with HGPs are eligible for MSA grading.
- HGP usage is to be declared on both the MSA and LPA national vendor declarations.

MSA research was conducted with product from male and female cattle produced in both northern and southern Australia utilising both grass and grainfed systems. Breeds included purebred Angus and Bos indicus composites sourced from commercial and research herds. A number of HGP products and combinations were used with between one and seven treatments at various stages of production.

What is the effect on marbling?

The use of HGPs reduces the amount of marbling at a constant carcase weight. With reduced marbling there is a reduction in MSA score for many cuts. (See *MSA Tips & Tools: The effect of marbling on beef eating quality*).

What is the effect on ossification?

Australian and US research has shown that ossification is increased by HGP use. This increase can be quite dramatic when the HGP is applied at a young age. The research concluded that the increase in ossification score is variable depending on the time of implanting. If ossification were constant, then the increased carcase weight gained from using the HGP would lead to a higher MSA score, however this is not the case in commercial application.

Table 1: Hormonal Growth Promotant by Hang by Days Ageing

	FREE									TREATED								
	AT			TX			TL			AT			TX			TL		
	5	14	21	5	14	21	5	14	21	5	14	21	5	14	21	5	14	21
	CMQ4			CMQ4			CMQ4			CMQ4			CMQ4			CMQ4		
Tenderloin	77	77	77	76	76	76	75	75	75	77	77	77	75	75	75	74	74	74
Cube Roll	61	62	64	65	66	68	66	68	69	58	60	61	62	64	65	64	65	66
Striploin	57	59	62	64	66	67	65	67	68	55	58	60	63	64	65	64	65	66
Rump	53	55	56	60	61	63	60	62	63	52	53	55	58	60	61	59	60	61
Blade	57	57	57	57	57	57	57	57	57	55	55	55	55	55	55	55	55	55
Topside	41	43	44	47	48	49	48	48	49	40	42	43	46	47	47	46	47	48

The above data is taken from a standard MSA carcase with the following specifications: 290kg HSCW; male; 60mm hump; 150 ossification; 320 MSA marbling; 6mm rib fat ; 5.60 pH ; 7.1°C loin temp, and grill cook method. NB: Although HGP use affects CMQ4 Score and MSA grade with all attributes kept equal, the effect on ossification, marbling and hump height will increase the difference seen between HGP-treated and non-treated animals.

How will my cattle grade?

HGP use must be declared on the MSA and LPA National Vendor Declarations. If a producer is unsure of the growth promotant history of the animals, the 'yes' box should be ticked.

HGP use will not exclude cattle from MSA grading but it will affect the MSA score obtained for different muscles, depending on how close they are to the grade boundary. The CMQ4 score for each cut is determined by a combination of variables. Some, such as marbling and carcase weight, are positive, while others, such as increased maturity, are negative. It is the combination of all these factors that determines the difference.

As the MSA Index gives a measure of the overall eating quality potential of the carcase by taking a weighted average of the CMQ4 scores for 39 primal and sub-primal cuts, the effect HGP's have is included within the MSA Index. The relative importance of HGP-use as an attribute affecting MSA index is very high and the MSA Index of carcases with no HGP use is around 5 Index units higher than carcases that have been treated with HGPs.

Table 2: Hormonal Growth Promotant

	FREE			TREATED		
	CMQ4	Star Value	MSA Index	CMQ4	Star Value	MSA Index
Tenderloin	77		59.99	77		55.16
Cube Roll	61			58		
Striploin	57			55		
Rump	53			52		

The above data is taken from a standard MSA carcase with the following specifications: 290kg HSCW; male; 60mm hump; AT hang method; 150 ossification; 320 MSA marbling; 6mm rib fat ; 5.60 pH ; 7.1°C loin temp, grill cook method, aged 5-days.

How can grading outcomes be improved?

There are two principal post-slaughter management procedures that can be utilised to improve the eating quality of animals treated with HGPs. The first is to increase the ageing period, especially on cuts that have high ageing rates. The second is to use the tenderstretch method of hanging carcases. The improvement with ageing correlates with the ageing potential of the muscles, so that cuts that improve significantly with ageing, such as striploin, will improve to a greater extent than cuts such as tenderloin.

Tenderstretch has a positive impact on eating quality (See *MSA Tips & Tools How tenderstretch affects beef eating quality*). The table above shows the effect of ageing or tenderstretch on the example carcase shown above from a steer implanted with HGPs.

MSA's objective is to accurately predict the eating quality as judged by the consumer, not to be prescriptive as to how to raise, process or sell cattle. The decision on whether or not to include HGPs in a management program rests with the producer and will be influenced by the mix of production and eating quality effects and their economic impact.

A tenderstretch carcase.

Further information
Visit www.mla.com.au/msa or
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