

PAIN RELIEF

RESEARCH FOR MULESING

Research co-funded by AWI has shown that using a combination of the Tri-Solfen® and Buccalgesic® pain relief products provides more prolonged relief from mulesing than using each of the products on its own.

Tri-Solfen is a topical product applied after mulesing and contains local anaesthetic agents to alleviate pain, and haemostatic and antiseptic agents to reduce bleeding and promote healing. In the six and a half years since Tri-Solfen was first registered, it has become widely used – three-quarters of Merinos mulesed now receive pain relief.

Ilium Buccalgesic® OTM, a buccal formulation containing the non-steroidal anti-inflammatory drug (NSAID) meloxicam, was registered in 2016 for the alleviation of pain associated with castration and tail docking in sheep and in October 2017 the Australian Pesticides and Veterinary Medicines Authority (APVMA) approved Buccalgesic for the alleviation of pain associated with mulesing.

The meloxicam product from Troy Laboratories is a pre-operative analgesic, administered as a viscous solution between the inside of the cheek and molar teeth of sheep from where it is absorbed into the blood stream.

A recently concluded research project – co-funded by AWI, CSIRO and Troy Laboratories Pty Ltd – provides a welfare assessment of Tri-Solfen® and the Meloxicam-based Ilium Buccalgesic® OTM product, on female lambs for mulesing.

The research was undertaken by CSIRO at Armidale, NSW. CSIRO Principal Research Scientist, Alison Small, said the research demonstrated the efficacy of Buccalgesic, alone and in combination with Tri-Solfen, in reducing the pain responses of female

lambs and female weaner lambs that underwent surgical mulesing.

“The use of the analgesic agents Buccalgesic and Tri-Solfen singly or in combination provides analgesic benefits that persist for at least six hours post mulesing based on behavioural observations, and up to 24 hours based on physiological parameters,” Dr Small said.

“Tri-Solfen provided rapid-onset analgesia, but the duration of analgesic effect of the lignocaine and bupivacaine contained in Tri-Solfen was shorter than that of the meloxicam contained in Buccalgesic. Buccalgesic was slower to provide obvious changes to the parameters indicating effective analgesia, but the duration of analgesic effect of meloxicam was longer than that of local anaesthetic agents.

“The best outcome was seen where Tri-Solfen and Buccalgesic were used in combination, delivering the benefits of both local anaesthetic and non-steroidal anti-inflammatory agents. Buccalgesic therefore offers a good adjunct to Tri-Solfen in extending the pain relief period for sheep undergoing surgical mulesing.”

As a recent national survey shows that 96% of producers mules at marking, the main age group used in the studies was 6-10 week old lambs. However, the field study also included animals of 8-10 months, because some animals in Australia are mulesed at around 9 months of age – in situations where mulesing lambs coincides with the high flystrike risk season.

The project comprised two distinct but complementary study formats: a pen study, carried out in an animal house; and a field study, carried out in a paddock.

The pen study was the most detailed of the two studies because, as well as observing individual behavioural pain indicators (eg postural behaviour such as hunched/statue standing, and active pain avoidance behaviour such as a reluctance to lie down), researchers were also able to observe physiological pain indicators (eg pain-related hormones such as cortisol) and include an assessment of key haematological parameters (blood samples were collected). Only single-born female Merino lambs were used in the studies.



Buccalgesic® being applied to the internal cheek of a lamb during the research trials. The buccal (inside of cheek) formulation has a thick consistency so after application (using a modified drench gun) it adheres to the mucous membrane of the mouth.

“In this study, the administration of analgesics increased the amount of time that mulesed lambs spent lying down, and feeding – with the combination of Buccalgesic and Tri-Solfen appearing to be the most effective. While analgesic treatments did not significantly reduce ‘hunched standing’, the lack of ‘statue standing’ of the Buccalgesic and Tri-Solfen group of lambs was very similar to that experienced by lambs that hadn’t been mulesed,” Dr Small said.

“Administration of analgesic agents also increased the wound healing response to mulesing, compared to those lambs that hadn’t been given pain relief. Tri-Solfen administration resulted in a significantly lower cortisol concentration at 30 minutes post-mulesing, while the Buccalgesic-only group had a significantly lower cortisol concentration at six hours post-mulesing. The combination treatment of Buccalgesic and Tri-Solfen consolidated the benefits of both agents.

“The analgesic treatments, especially the combination of Buccalgesic and Tri-Solfen, also lessened the impact of mulesing on the animal’s leucocyte (white cell) profile that helps the body fight bacterial infection.”

While welfare trials offer valuable information about the effectiveness of pain relief treatments, woolgrowers are encouraged to seek advice from a veterinarian regarding their own situation. **B**



Recording the behavioural responses of lambs following the use of pain relief at mulesing in field studies at CSIRO’s Armidale research site.