

# The Impacts of Mulesing Alternatives on Sheep Welfare

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## Introduction

Animal welfare is increasingly being scrutinised in Australia and one issue receiving particular attention is mulesing, the removal of wrinkled folds of skin around a sheep's breech area to prevent blowfly and maggot infestation. This procedure is commonly performed without any form of pain relief. In the past, it has been justified on the basis of being a preventative health measure against breech flystrike. Its success as a flystrike inhibitor has resulted in widespread use and it is performed on 35 million lambs in Australia annually (Hemsworth *et al.*, 2009). In 2004, the Australian wool industry announced that mulesing would be phased out by 31 December 2010 (Levot *et al.*, 2009). We have almost reached this time limit and recent studies show that there are alternative methods in development with the potential to enhance sheep welfare greatly.

## Discussion

Although there are plans to phase out mulesing in the near future, if no viable alternative becomes widely available, simply tolerating high levels of flystrike in a non-mulesing environment would not be acceptable. Lomax *et al.* (2009) assessed the impact that a newly developed topical anaesthetic, Tri-Solfen, has on pain alleviation and wound healing in lambs after mulesing. This is a post-mulesing treatment, as it is a local anaesthetic with limited skin penetrability (Lomax *et al.*, 2009). Lomax *et al.* (2009) measured wound sensitivity and the rate of wound healing, and observed behavioural responses of lambs following the procedure. Wound sensitivity was measured by calibrating Von-Frey microfilaments to bend at two predetermined pressures associated with light touch (LT) and pain (P). These tested the lambs' responses to LT and P at various sites on the wound and surrounding area. The rate of wound healing was measured using digital photography and computer-assisted wound-surface mapping. Lomax *et al.* (2009) found that administering Tri-Solfen tended to reduce wound sensitivity for up to 24 hours, reduced pain-related behaviour, and increased the rate of wound healing. Tri-Solfen has the potential to be adopted by farmers who seek an inexpensive and practical product that is not labour intensive and can be applied to large mobs of sheep. However, Tri-Solfen is not the long-term solution sought by the animal-welfare groups, and research must continue to identify and assess pre-operative treatments, and non-surgical or alternative solutions.

Even if mulesing continues with a pre- or post-operative anaesthetic, there is evidence to suggest that the severity of the mulesing wound causes concern for lamb welfare for more than 48 hours after the procedure has taken place (Hemsworth *et al.*, 2009). Hemsworth *et al.* (2009) compared the effects of mulesing and two new alternative procedures on lamb welfare. The first was an intradermal injection of sodium lauryl sulphate, which causes necrosis of skin around the breech area. The second procedure was the attachment of plastic clips to the skin folds that would normally be removed during mulesing, causing ischaemic necrosis of this skin. Both procedures aim to stretch and tighten the breech skin, as happens in mulesing, but without the same adverse physiological and behavioural effects. Female Merinos (n=55) were used over four treatments: control, intradermal, clip and mules. Following treatment, video was used to continuously record lamb behaviour on Days 1-7, 15 and 22 post-treatment. Subsequently, the behaviour and posture of each lamb were recorded at 15-minute intervals. Blood was sampled from each lamb to measure cortisol and haptoglobin concentrations at 15 and 120 minutes after treatment and then on Days 2, 3, 4, 7, 14 and 21. Live-weights were recorded, and one trained observer assessed the gait of each lamb using a four-point gait score. The results indicated that traditional mulesing adversely affected the lambs' behavioural and physiological responses, and thus welfare, for up to three weeks following the procedure, compared to the control, clip and intradermal treatments. In contrast, there were no differences between the responses of lambs in the clip and intradermal treatments compared to the control treatment, for most of the variables measured. However, the intradermal treatment did show considerable differences in cortisol and haptoglobin concentrations compared to the control. Although these alternatives did present some moderate short-term stress responses, Hemsworth *et al.* (2009) showed that they do offer significant advantages to the lambs' welfare over the traditional mulesing procedure.

In the race to find a suitable alternative to mulesing, there has been extensive research to determine if protecting unmulesed sheep non-surgically would be a viable option. James *et al.* (2009) assessed this possibility using dicyclanil, an insect-growth regulator, as a preventative measure for blowfly strike (Novartis Animal Health 2010). Unmulesed weaners (n=380) were crutched and randomly allocated into four treatment groups: untreated control, treated with dicyclanil on the breech immediately after crutching, treated with dicyclanil on breech and body immediately after crutching, and treated with dicyclanil on the breech 6 weeks after shearing. *Lucilia cuprina* larvae were implanted on the breech of 10 sheep from each treatment group at 3, 4 and 5 months after crutching and at 3, 4, 5 and 6 months following shearing. In comparison to the Control group, the dicyclanil treatment groups had significantly fewer strike outbreaks up until 4 months after crutching. The most effective treatment proved to be application of dicyclanil 6 weeks after crutching or shearing, which indicates that this could be a possible method to protect unmulesed sheep. Although this alternative is not permanent, it could prove to be an effective welfare option if farmers adopt a well-timed integrated management program involving crutching, shearing and dicyclanil treatment (James *et al.*, 2009).

## Conclusion

These studies are an important contribution to the current knowledge and understanding of pain management in mulesed lambs and the effectiveness of possible alternative treatments. However, the long-term aim is to find a pain-free solution or alternative to mulesing that takes into consideration the welfare of the animal, as well as the economic limitations, time restraints and practical issues faced by farmers.

## References

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