

## PAIN RELIEF IN NZ LAMBS

### Introduction

Societal and customer expectations for better animal wellbeing is driving increased use of pain relief for tailing and castration in lambs.<sup>1</sup> Sheep farmers are also evaluating alternatives to these procedures.<sup>2</sup>

Pain relief in sheep for routine husbandry procedures such as castration and tailing, is only legally required for animals six months of age or older in New Zealand (NZ).<sup>3</sup> However, provision of pain relief in younger lambs is recommended best practice, and will become mandated in the future.

In NZ the majority of male lambs are castrated with a rubber ring, at the same time as tailing. Surgical castration is far less common. For tailing, hot iron is the predominant method used in lambs, with rubber rings less popular. Tailing with a cold knife is now illegal in NZ.

Tailing reduces faecal build-up around the lambs' rear end. This helps prevent flystrike. Also, docked lambs are easier to deal with at shearing time. Castrating lambs is undertaken to avoid having to separate ram and ewe lambs, as pregnancies can occur in ewe lambs as young as 4 months of age. Castrated rams are also easier to handle as they get older. Some farmers are now assessing whether all lambs require tailing, and if castration could be limited to only those male lambs remaining on farm after weaning. Genetic solutions are also being explored, such as breeding for shorter tails.<sup>8</sup>

### ZQ – leading the way with best practice lamb care in New Zealand

Recently, NZ Merino's brand ZQ aligned to the Responsible Wool Standard (RWS; a global standard implemented by Textile Exchange). One of the requirements is that all sheep receive pain relief for castration, tailing and shearing wounds.

For ZQ growers, implementation of this requirement is staged over the next 3 years, with the first group of farms (fine wool) required to comply from June 2023, with the remaining growers of mid- and strong wool joining by 2025.<sup>4</sup> Best practice 'lamb care' is a key initiative to maintain ZQ as a valued supplier for the inclusion of NZ wool in premium European apparel.

### Measuring pain in lambs

Sheep are a prey animal, and instinctively mask signs of pain in order to hide any weaknesses from predatory animals. When measuring pain, consideration needs to be given to behavioural, physical and physiological changes.<sup>1</sup>

It is widely accepted that during tailing and castration, there is acute (immediate) pain as well as chronic (longer-term) pain.<sup>1</sup> The pain associated with castration and tailing is most obvious in the first four hours,<sup>5</sup> but behavioural changes persist for days post procedure.<sup>1</sup> The behavioural signs of pain include tail twitching, lying down, open mouth panting, and other signs of discomfort such as vocalising and restlessness.<sup>6,7</sup>

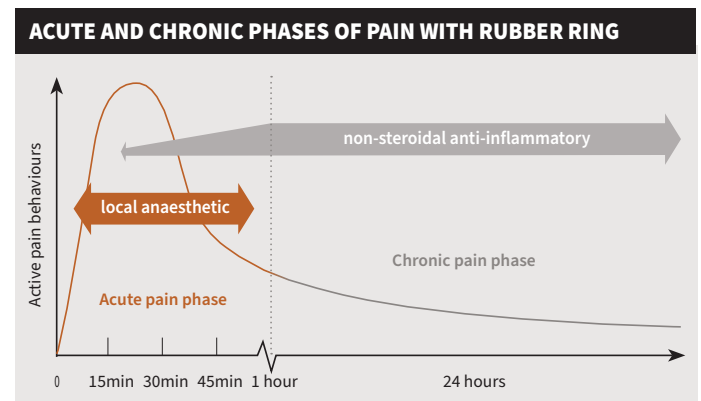


Figure 1. Acute and chronic phases of pain associated with rubber ring application (with no pain relief), and duration of pain relief effect of local anaesthetic and non-steroidal anti-inflammatory drugs.<sup>8</sup>

Mellor and Stafford found that surgical methods of castration and/or tailing caused the greatest cortisol responses, and concluded these methods more painful than rubber rings or hot iron cautery.<sup>9</sup>

Studies have also been undertaken to determine the efficacy and benefits to lambs when pain relief is administered around the time of husbandry procedures, including the use of non-steroidal anti-inflammatory drugs (NSAIDs) and local anaesthetic. A challenge in assessing the effect of pain relief is the large individual variation in response, and the fact that social and environmental context can modulate the responses.<sup>1</sup> For example, stress and fear during yarding and handling can increase cortisol levels in lambs.<sup>10</sup>

Even with multimodal approaches to pain relief using both local anaesthetic and NSAIDs, pain is reduced but not fully eliminated. However, it is important to mitigate the pain associated with castration and tailing.

## Pain relief options

There are several pain relief options for use in lambs, with local anaesthetic and NSAIDs the most practical options.

### Local anaesthetic

Short acting products such as lignocaine take effect within 5-15 minutes and provide pain relief for up to one hour. Longer acting products such as bupivacaine take effect within 10-45 minutes and last up to 3 hours.<sup>1</sup> Local anaesthetics are usually injected, but can be applied topically to wounds. Studies have shown that local anaesthetic reduces cortisol levels and signs of pain behaviours when administered around the time of tailing and castration<sup>1,11</sup> (Figure 2), however the location and timing of administration impacts on how effective the pain relief is.

**ABNORMAL POSTURAL BEHAVIOURS IN LAMBS AFTER TAILING**

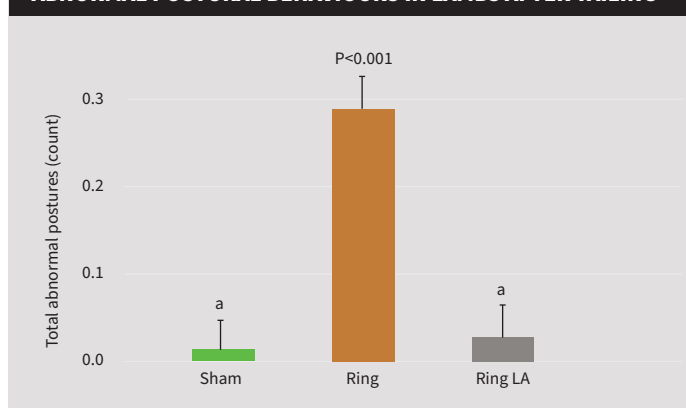


Figure 2. Abnormal postural behaviours in lambs 1 hour after tailing with (Ring LA) or without (Ring) local anaesthetic, or sham treatment.<sup>11</sup>

For the most effective pain relief local anaesthetic should be administered several minutes prior to the procedure. For castration, injection should be into the scrotal neck. When tailing lambs, the evidence shows that multiple injections provide better pain relief than a single injection.<sup>8</sup> Specific applicators such as Numnuts have been developed to assist with ringing procedures, injecting lignocaine concurrently with rubber ring application. Those administering local anaesthetic need to be trained, and this alone, or in combination with the need to administer multiple injections may be viewed as impractical by farmers.

A topical local anaesthetic product uses a combination of a short and longer-acting local anaesthetic, along with adrenaline, to provide rapid and longer-lasting pain relief (up to 4 hrs) when applied to a wound. The claims of longer action (up to 24hrs) of this product only applies to mulesing and other surgical wounds.<sup>1</sup> With hot iron tailing the cauterised crust may prevent absorption of the product, so generally injectable options are preferred when using hot iron. Topical pain relief products are unsuited for rubber ring castration and tailing, as no open wound exists.

## Non-steroidal anti-inflammatory drugs (NSAIDs)

NSAIDs reduce inflammation, pain and fever. Used in cattle for many years, injectable meloxicam has more recently been registered for sheep (e.g. Melovem 30). When injected or administered orally, typically meloxicam takes effect within 15-30 minutes, and provides pain relief for approximately 24hrs, hence is useful for managing chronic pain.

Small *et al* reported a seven-fold decrease in adverse animal behaviours eight hours after surgical castration and hot iron tailing when oral meloxicam was administered post-procedure (Figure 3), with a smaller effect still present at 24 hours.<sup>12</sup> Colditz *et al* reported meloxicam's maximal effect when given by injection, was 6-9 hours post treatment.<sup>13</sup>

**TOTAL ABNORMAL BEHAVIOURS**

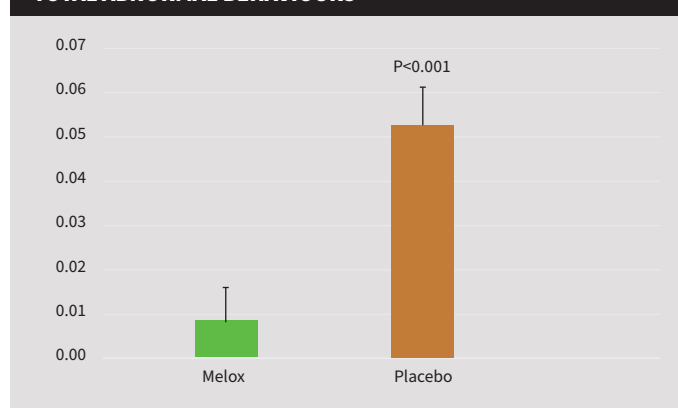


Figure 3. Proportion of time derived from sampling at 15min intervals spent in abnormal behaviours and postures in the 8hrs following tailing and castration of meloxicam and placebo treated lambs.<sup>12</sup>

**Take home message:** Most pain relief products help to mitigate the pain an animal experiences during and after a husbandry procedure, but will not completely eliminate all pain. Using a combination of products (such as local anaesthetic and meloxicam) to cover both the acute and chronic pain will provide better overall pain relief than using single products alone.<sup>8</sup> Remember to consider all procedures being undertaken (e.g. male lambs are often castrated and tailed) when selecting pain relief<sup>2</sup> (Table 1).

Husbandry procedure	Meloxicam	Local anaesthetic injection/s
Hot iron tailing	suitable	suitable#
Hot iron tailing /ring castration	suitable	suitable#
Ring tailing	suitable	suitable
Ring castration	suitable	suitable
Ring tailing and castration	suitable	suitable

Table 1. Pain relief options for tailing and castration (adapted from Pain mitigation in sheep factsheet).<sup>2</sup>

#Administration can be more challenging as the specific local anaesthetic applicator (Numnuts) is only designed for ringing procedures.

### **A note on the cost : benefit of pain relief in sheep**

From a production perspective, lambs that do not receive pain relief at tailing/castration have decreased feed intake initially. However, Australian studies showed insufficient evidence to conclude a longer-term impact on growth rates.<sup>6</sup> The primary benefit when using pain relief for tailing and castrating lambs is better animal wellbeing, leading to vets and sheep farmers having peace of mind in doing the right thing. Farmers and veterinarians are also helping to protect their farming industry by ensuring final products have met consumer expectations around better lamb care.

### **Summary:**

- Use of pain relief for castration and tailing is increasing due to societal and customer expectations for better lamb care. It is only a matter of time before it will become a mandatory requirement.
- Benefits to using pain relief for husbandry procedures include improved animal wellbeing, increased market access and final product premiums.
- The goal is to mitigate the pain associated with these husbandry procedures. The most practical and effective pain relief options available for use in NZ lambs are local anaesthetics and NSAIDs.
- Local anaesthetic takes effect within minutes and provides acute pain relief. Meloxicam takes longer to take effect but provides pain relief for longer. Using both local anaesthetic and NSAIDs together will provide better pain relief, but may not be practical in NZ farming systems.
- Most NZ lambs undergo hot iron cautery tail removal and rubber ring castration, with the most practical pain relief method being a single injection of meloxicam.

## **References**

- <sup>1</sup>Small A, et al. Analgesia for Sheep in Commercial Production: Where to Next? *Animals*, 2021, 11, 1127.
- <sup>2</sup>FactSheet: pain mitigation in sheep. Meat and Livestock Australia. [https://www.mla.com.au/globalassets/mla-corporate/researchand-development/program-areas/animal-health-welfare-andbiosecurity/20mla-pain-mitigation-factsheet\\_sheep\\_v4.pdf](https://www.mla.com.au/globalassets/mla-corporate/researchand-development/program-areas/animal-health-welfare-andbiosecurity/20mla-pain-mitigation-factsheet_sheep_v4.pdf)
- <sup>3</sup>[www.mpi.govt.nz/dmsdocument/46045-Code-of-Welfare-Painfulhusbandry-procedures](http://www.mpi.govt.nz/dmsdocument/46045-Code-of-Welfare-Painfulhusbandry-procedures)
- <sup>4</sup>[www.discoverzq.com](http://www.discoverzq.com)
- <sup>5</sup>Lester SJ, et al. Behavioural and cortisol responses of lambs to castration and tailing using different methods. *New Zealand Veterinary Journal*. 1996, 44, 45-54.
- <sup>6</sup>Kent JE, et al. Comparison of methods for the reduction of acute pain produced by rubber ring castration or tail docking or week old lambs, *The Veterinary Journal*. 1998, 155(1), 39-51.
- <sup>7</sup>Kells NJ, et al. Effect of analgesic strategies on pain behaviour associated with combined ring castration and hot iron tail docking in Merino lambs. *Applied Animal Behaviour Science*. 2019, 222.
- <sup>8</sup>D Robertson. Lamb tailing and castration pain management options. *Sheep and Beef Newsletter*. February 2022.
- <sup>9</sup>Mellor DJ, Stafford KJ. Acute castration and/or tailing distress and its alleviation in lambs. *New Zealand Veterinary Journal*. 2000, Apr; 48(2): 33-43.
- <sup>10</sup>Hemsworth PH, et al. Relationships between handling, behaviour and stress in lambs at abattoirs. *Animals*. 2019, 13:6, 1287-1296.
- <sup>11</sup>Small A, et al. Local anaesthetic delivered with a dual action ring and injection applicator reduces acute pain response of lambs during tail docking. *Animals*. 2021, 11, 1242.
- <sup>12</sup>Small A, et al. Efficacy of a buccal meloxicam formulation for pain relief in Merino lambs undergoing knife castration and tail docking in a randomised field trial. *Australian Veterinary Journal*. 2014, 92:382-388.
- <sup>13</sup>Colditz I, et al. Efficacy of meloxicam in a pain relief model in sheep. *Australian Veterinary Journal*. 2019, 97:23-32.

Melovem 30 ACVM no. A11562 is a Restricted Veterinary Medicine registered to AgriHealth NZ Ltd. Available only under a veterinary authorisation.

# Melovem 30



## WHAT IS MELOVEM 30?

Melovem 30 is a non-steroidal anti-inflammatory, analgesic and antipyretic injection for use in cattle, sheep, pigs and horses containing meloxicam, 30mg/mL.

## WHAT IS MELOVEM 30 FOR?

Melovem 30 is for the treatment of pain, fever and inflammation in cattle, sheep, pigs and horses.

## WHEN SHOULD YOU USE MELOVEM 30?

Melovem 30 should be used when animals are showing signs of pain, inflammation (heat, redness, swelling) or have a high temperature. It is often used in conjunction with other treatments such as antibiotics, metabolic treatments or electrolytes.

### Conditions where Melovem 30 is useful include:

#### Cows:

- Mastitis
- Mammary oedema (swollen udder)
- Respiratory conditions
- Colic
- Calf scours
- Calf disbudding
- Difficult calving
- Musculoskeletal conditions such as lameness and 'pinched' nerves

#### Sheep:

- Tailing (also known as docking)
- Castration
- Shearing cuts

#### Pigs:

- Locomotor disorders
- Septicaemia
- Toxaemia

#### Horses:

- Musculoskeletal disorders
- Colic

## HOW DO YOU USE MELOVEM 30?

Administer alone or in combination with antibiotic therapy as appropriate.

**CATTLE:** Administer 1.0mL per 60kg body weight (0.5 mg meloxicam/kg) by subcutaneous or intravenous injection. For very young calves weighing less than 50kg a dose rate of 0.3mL per 20kg is appropriate. For single use only.

**SHEEP:** Administer 1.0mL per 30kg body weight (1mg meloxicam/kg) by subcutaneous injection high on the neck behind the ear. For a 9kg lamb at docking a dose of 0.3mL is appropriate. For single use only.

**PIGS:** Administer 1.0mL per 75kg bodyweight (0.4 mg meloxicam/kg) by intramuscular injection in the anterior neck. Can be repeated once after 24 hours if necessary.

**HORSES:** Administer 1.0mL per 50kg bodyweight (0.6mg meloxicam/kg) by intravenous injection. For single use only.

## WITHHOLDING PERIOD

**Cattle:** Meat- 10 days  
Milk- 84 hours

**Pigs:** Meat- 3 days

**Sheep:** Meat- 11 days  
Milk- 84 hours

**Horses:** Meat- 28 days

## STORAGE

Store below 25°C in original container  
Use within 90 days of opening

## PACK SIZES

Available in 100mL bottles

REGISTERED VETERINARY MEDICINE

ACVM Registration Number: A11562