



# TRI-SOLFEN<sup>®</sup>

**Better Choices • Better Outcomes**

*Topical anaesthetic and antiseptic for calves*

# Animal welfare is important for your livestock and for you

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The practices of castrating, disbudding and dehorning calves are considered essential to good herd management and the ongoing welfare of your cattle. These procedures reduce sexual activity and aggression, avoid unwanted breeding, reduce injury to cattle and damage to structures, and make cattle safer to work with.

Producers, their customers and consumers are more interested than ever before in animal welfare and an important aspect of that is managing and controlling pain when these types of procedures are carried out.

## BEST PRACTICE IS ESSENTIAL FOR OUR INDUSTRY

The Australian Animal Welfare Standards and Guidelines for Cattle were published with support of Government, Australian Dairy Farmers, the Australian Lot Feeders Association and the Cattle Council of Australia. It addresses a wide range of important welfare considerations that are of significance to all producers and for the cattle industry as a whole.

Specifically in relation to surgical procedures on cattle, the Guidelines recommend:<sup>1</sup>

- The use of pain relief.
- Castration, disbudding and dehorning should be carried out as young as possible.
- Disbudding should be done in preference to dehorning. For disbudding, hot-iron cautery is preferred over excision methods.
- Bleeding from the surgical site should be minimised.
- Good hygiene and use of disinfectants should be adopted to reduce infection risk.

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*“The development and use of Tri-Solfen is crucial in advancing animal welfare in Australia. It’s an important step in diminishing the concerns of producers and consumers on the adverse welfare outcomes of pain inflicted during interventions performed routinely in livestock husbandry.”*

Peter A Windsor, DVSc PhD DipECSRHM  
Professor Emeritus, The University of Sydney, NSW

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## Where does Tri-Solfen fit in?

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**T**ri-Solfen is an easy to administer, non-prescription, over the counter formulation with a powerful combination of two local anaesthetics for rapid and longer-term **pain relief**, adrenaline to **reduce bleeding** and an antiseptic agent to help **reduce infection risk**. Tri-Solfen's gel formulation also helps to **seal the wound** for improved wound healing.

**Tri-Solfen is the only product registered in Australia for cattle that has all of these modes of action, leaving it unrivaled for these types of surgical wounds.**

## How does Tri-Solfen work?

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**T**ri-Solfen is a viscous liquid that is easily applied to surgical wounds using the dedicated Tri-Solfen applicator.

Tri-Solfen's novel formulation contains a unique combination of 4 ingredients:

- **Lignocaine** and **Bupivacaine** – local anaesthetics that provide pain-relief on surgical wounds.

Clinical studies, conducted by world leading universities have shown the positive effect Tri-Solfen has on reducing pain.<sup>2-4</sup> Importantly, over many years, producers have seen the proof of Tri-Solfen's positive effects on stock behaviour, right from the moment of application.

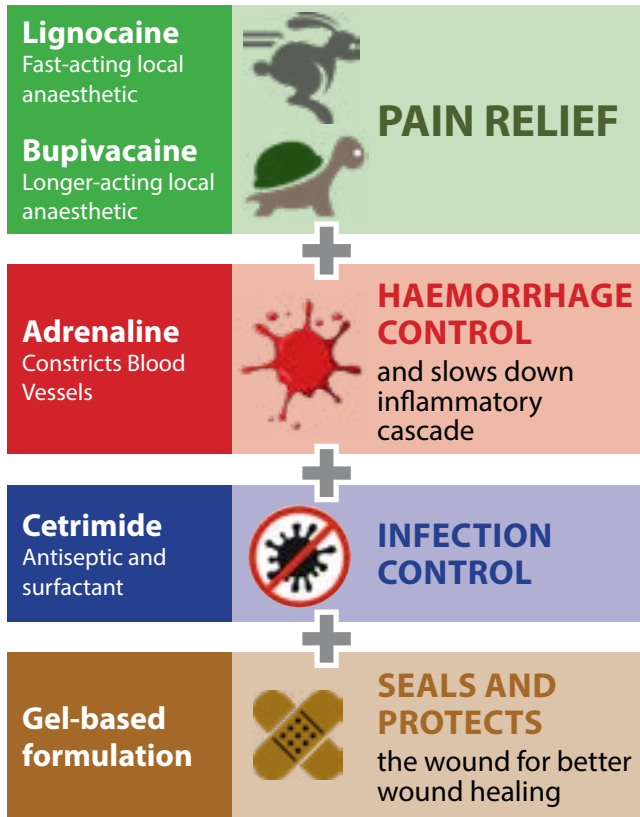
Tri-Solfen fits perfectly with your goal to provide a high standard of care for your livestock. It also fits with the industry's objective to meet consumer expectations that livestock production must include a high level of consideration for animal welfare.

- **Adrenaline** – to reduce bleeding.
- **Cetrimide** – an antiseptic agent to help reduce the risk of infection.

When applied correctly with the dedicated Tri-Solfen applicator it forms a foaming gel over the wound that helps to protect the wound from secondary infection and aids in the wound healing process.

# Tri-Solfen is a unique 4-in-1 wound care product

## THERE'S NO OTHER PRODUCT LIKE IT!



### 1. Both fast and longer acting pain relief

**Lignocaine** – is a fast-acting anaesthetic, commonly used in surgical procedures in humans and animals. In Tri-Solfen it provides animals with fast acting pain relief.

**Bupivacaine** – is a longer-acting anaesthetic that provides prolonged pain relief.

The unique formulation blocks the nerve signals from damaged tissue that are responsible for the sensation of pain. This reduces the animal's pain response, resulting in animals becoming visibly more comfortable and importantly returning to their normal feeding and mothering up.

### 2. Reduction in post-operative bleeding

**Adrenaline** – works by constricting blood vessels that have been cut during surgery. This reduces the loss of blood and limits the risk associated with increased stress and shock to the animal. Adrenaline also prolongs the anaesthetic effect on the wound due to a reduced rate of systemic absorption of the anaesthetics.

### 3. Reduced wound healing time

**Cetrimide** – is an antiseptic agent. It helps reduce the risk of bacterial contamination and infection of wounds. Infection sets back the healing process and in the worst cases can lead to mortality. Reduced bleeding from adrenaline and the disinfectant qualities of cetrimide help the healing process to get started faster. It is also important to use sound surgical procedures as outlined in the MLA document; "A guide to best practice husbandry in beef cattle: Branding, castrating and dehorning". 2019.

### 4. Reducing inflammation and long-term pain

Reducing bleeding and infection helps to minimise the inflammation process, reducing and slowing down the pain cascade process.

The unique Tri-Solfen formulation assists in the reduction of inflammation in the first 24 hours after the surgical procedure and plays a role in reducing pain levels.

*“We use Tri-Solfen. Good for your cattle, your bottom line and our industry.”*

Troy Setter, Chief Executive Officer  
Consolidated Pastoral Company.

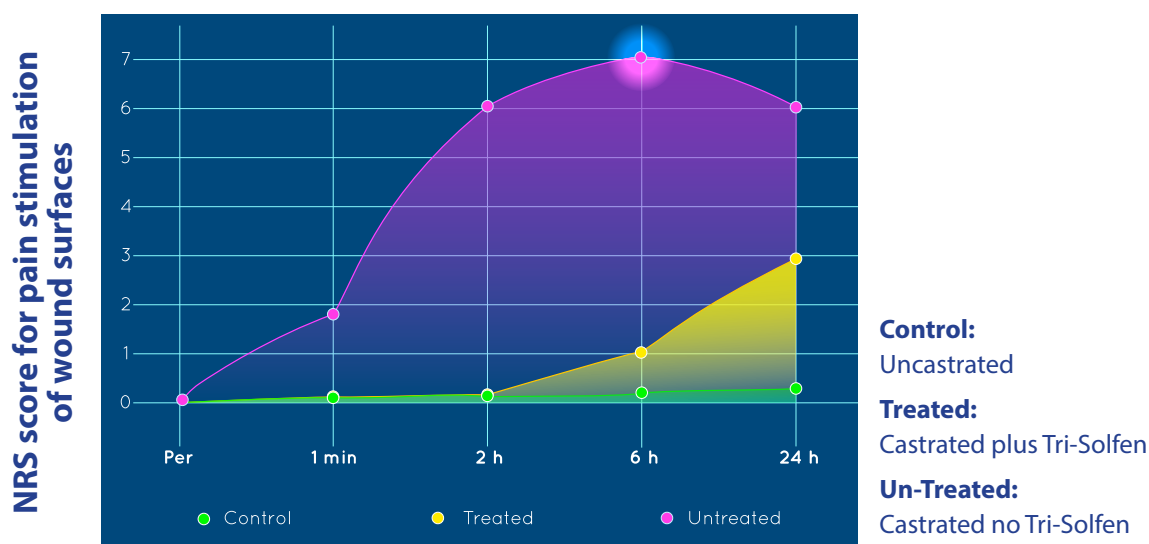
## Independent university research

Clinical studies compared Tri-Solfen treated castrated calves to untreated castrated calves and calves which were not castrated.<sup>2</sup> Pain was assessed by applying an electronic aesthesiometer and von Frey monofilaments to the wound and surrounding skin, to provide a calibrated force

to the castration wound. A numerical rating scale (NRS) score was then recorded based on the animal's reflexes when the force was applied to the wound. Results are shown in Figure 1 below. A higher NRS score reflects greater wound sensitivity and subsequently greater pain stimulation.

### NRS score for pain stimulation of the castration wound over a 24-hour period.

Figure 1:



Adapted from Lomax S, Windsor PA. Anim Sc, 2013.

### CASTRATED CALVES TREATED WITH TRI-SOLFEN DISPLAYED:

- Similar behaviours to the uncastrated calves.
- Less pain-related behaviours than untreated castrated calves at all time points after castration.
- Significantly higher pain thresholds in wounds and surrounding skin to the untreated calves.<sup>2</sup>

The onset of pain relief was rapid at the time of surgery and lasted up to 24 hours after castration. As evidenced by the rise in wound sensitivity of untreated calves over time, Tri-Solfen was also effective in reducing the post-surgical hypersensitivity. It is thought that this is an effect of the adrenaline in the formulation. Adrenaline constricts blood vessels, which reduces bleeding and prolongs the action of local anaesthetics by slowing their absorption. Reducing blood flow to the surgical site also suppresses the inflammatory cascade so nerve endings are not exposed to inflammatory compounds that would normally sensitise them.

### A UNIVERSITY OF SYDNEY TRIAL EXAMINED THE EFFECT OF TRI-SOLFEN ON THE PAIN RESPONSE OF DAIRY HEIFER CALVES UNDERGOING HOT-IRON AND SCOOP DEHORNING. CALVES TREATED WITH TRI-SOLFEN DISPLAYED:

- Significantly lower pain-related behaviours than untreated dehorned calves at all time points (from 30 mins to 5 hours) following hot-iron dehorning.
- No difference in pain-related behaviours following hot-iron dehorning compared to calves not dehorned (control group) over the same time points.
- Lower sensitivity to the wound and surrounding skin area compared to untreated dehorned calves following scoop dehorning.<sup>3</sup>

# What should I know about application?

**A**lways read the label for correct dosing and other relevant information – including correct hygiene and the cleaning of applicators.

Tri-Solfen is applied to the wound using the specifically designed Tri-Solfen applicator. **You must use this applicator** because the spray tip and castration nozzle have been designed to ensure that Tri-Solfen is converted from liquid to a gelling foam that adheres to the wound.

The applicator comes with a short fan tip that is suitable when dehorning or disbudding.

When castrating **you must use** the special castration nozzle which is designed to deliver Tri-Solfen into the vaginal tunic (tunica vaginalis). If you don't have a second applicator the castration nozzle will also generate the foaming gel for treating horn buds or other areas.

**To create the foam** you need to operate the applicator firmly and quickly.



The key steps to getting good results with Tri-Solfen are:

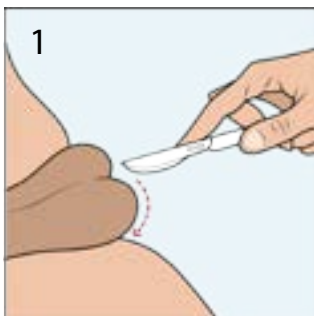
- Only use the Tri-Solfen applicator.
- Pull the trigger firmly and quickly enough to generate the gelling foam.
- Read the label and use the correct dose.
- Apply the product onto the complete area of the wound.
- When castrating – use the special castration nozzle and follow the directions below.

## CASTRATION – USE CASTRATION NOZZLE:

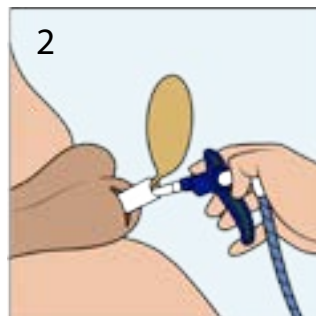
The total dose is based on the calf's weight and is divided and given in three smaller doses. For example, the castration dose for calves under 100kg is 6ml which is split as 2ml applied into the vaginal tunic around the spermatic cord of each testis before the testis is removed and 2ml for the

edges of the cuts in the scrotum.

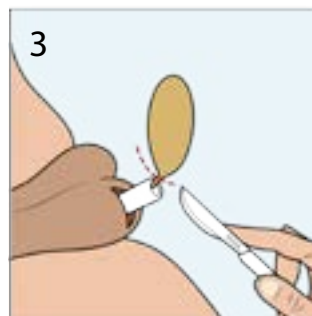
CASTRATION	TOTAL DOSE
Calves 30–100kg	6mL
Calves over 100kg	9mL



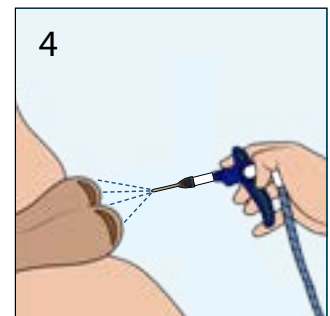
1  
Cut through skin of the scrotum with a scalpel as per normal procedure.



2  
Insert nozzle of applicator as far into the vaginal tunic as possible and eject 1/3 of the total dose.



3  
Remove testis as per usual procedure. Repeat steps 1–3 on the other side of scrotum to remove the second testis.



4  
Apply final third of the dose to the edges of the scrotal skin incision.



## DISBUDDING AND DEHORNING DIRECTIONS:

1. Perform disbudding or dehorning on each horn according to acceptable procedures.
2. Immediately after disbudding or dehorning the first horn, apply Tri-Solfen to completely cover the wound and surrounding edges. The recommendation is for two x 2ml shots on each side.
3. Repeat step 2 after disbudding or dehorning the second horn.
4. Do not spray to run off and take care not to get Tri-Solfen in the eyes of treated calves.

METHOD	DOSE PER HORN
Hot-iron (cautery) disbudding calves < 3 months of age	4mL
Scoop, cup or knife (excision) disbudding or dehorning calves	4mL

## WITHHOLDING PERIODS:

**MEAT:** Treated cattle must not be supplied or sold for slaughter for human consumption for at least 90 days following treatment.

**MILK:** DO NOT USE on lactating or pregnant cows where milk may be used or processed for human consumption.

**TRADE ADVICE:** Export Slaughter Interval (ESI): DO NOT USE less than 90 days before slaughter for export. Before using this product confirm the current ESI on the APVMA website:

[www.apvma.gov.au](http://www.apvma.gov.au).

## PACK SIZES AVAILABLE:

Tri-Solfen is available in 1L, 5L and 20L packs



## Better Choices

**B**etter Choices® is an audited welfare program for woolgrowers who follow an integrated, planned approach to achieve best-practice welfare for husbandry procedures in sheep.

The program will in the future be available for beef producers across Australia. If you are a beef producer who would like to be informed of the roll out of Better Choices for beef please email an expression of interest to:

[registration@betterchoices.com.au](mailto:registration@betterchoices.com.au)

To renew an existing Better Choices registration or to create a new registration go to the Better Choices website [www.betterchoices.com.au](http://www.betterchoices.com.au) or call **1300 595 250**. Or contact your local Dechra Territory Sales Manager.

**BETTER CHOICES®**  
A better life for livestock



#### References

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2. Lomax S, Windsor PA. Topical anaesthesia mitigates the pain of castration in beef calves. *J Anim Sci.* 2013; 91:1-8.
3. Espinoza C, Lomax S, Windsor P. The effect of a topical anaesthetic on the sensitivity of calf dehorning wounds. *J. Dairy Sci.* 2013; 96:2894-2902
4. McCarthy D, Windsor PA, Harris C, Lomax S, White PJ (2016) Effect of Topically Applied Anaesthetic Formulation on the Sensitivity of Scoop Dehorning Wounds in Calves. *PLoS ONE* 11(9): e0163181

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