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**EVALUATION OF STRATEGIES FOR ALLEVIATING
DEHORNING DISTRESS IN CALVES.**

A Thesis presented in partial fulfilment of the
requirements for the degree of
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in Physiology at
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Abstract

Animal welfare has been the focus of greater public attention in recent decades, increasing the demand for scientific enquiry into the effects of particular agricultural practices on the well-being of farm animals. The present study monitored the behavioural and plasma cortisol responses of 3-4 month-old calves to assess the distress caused by scoop dehorning during the first 9 hours after horn removal, and the extent that this distress may be reduced by minimising the scoop wound depth, or by giving prior injections of local anaesthetic and/or a non-steroidal anti-inflammatory drug (NSAID).

At the investigated scoop wound depths, the cortisol response which followed dehorning (consisting of an initial peak, followed by a decline at 2 hours to plateau values which did not return to control levels until about 7 hours after treatment), did not differ significantly between deep scoop and shallow scoop dehorning. However, NSAID administration abolished the plateau cortisol phase. Local anaesthetic plus the NSAID abolished both the initial cortisol peak and following plateau response, such that the total integrated cortisol response was not significantly different from control calves. Likewise the behaviour expressed by scoop dehorned calves was most similar to that of pain-free control calves, when both local anaesthetic and the NSAID was given prior to horn removal, compared to either drug alone, or neither. This infers that the distress caused by scoop dehorning in calves has two main components: an initial amputation pain and a more slowly developing inflammation pain, the former alleviated by local anaesthetic and the latter by NSAID.

Administration of local anaesthetic while abolishing the cortisol response during its nerve-blockade action, did not significantly reduce the overall cortisol response due to a marked rise after nerve-blockade effects ended. This suggests scoop dehorned calves despite being given local anaesthetic, still experience notable pain in the hours following scoop dehorning which is likely to be inflammation-induced.

The results of this study suggest little benefit in implementing a shallow scoop strategy in order to reduce post-dehorning pain-induced distress. Rather, administration of an anti-inflammatory analgesic in addition to local anaesthetic prior to scoop dehorning is likely to offer improved pain relief in calves undergoing this amputation procedure.

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