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**Assessment of Tail Docking and  
Disbudding Distress and its  
Alleviation in Calves**

A Thesis presented in fulfilment of  
the requirements for the degree of  
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by thesis only  
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## ABSTRACT

In this age of increasing awareness of animal welfare, the demand for scientific methods to quantify the welfare of animals maintained under different conditions and exposed to different husbandry procedures has also increased. The aim of the present study was to examine the acute distress involved in the procedures of tail docking and disbudding of Friesian dairy calves. Different methods of tail docking (rubber ring and docking iron) and disbudding (scoop and cautery), with or without the use of a local anaesthetic, have been assessed using changes in plasma cortisol concentration and some behavioural observation as indices of distress.

The practical objectives were to provide advice on choice of method and on the benefits or otherwise of using local anaesthetic to alleviate the pain associated with these procedures.

The innervation at the docking site of the bovine tail and the efficiency of two methods of local anaesthetic administration (epidural and ring block) in desensitising the tail were assessed. Epidural local anaesthetic was found to totally desensitise the entire tail whereas a ring block administration of local anaesthetic around the docking site only effectively desensitised an area immediately adjacent to the site of ring block administration. Hence, to ensure total loss of sensation in the tail, an epidural administration of the local anaesthetic was used in the tail docking experiments.

Tail docking, with or without a local anaesthetic, most three to four month old Friesian dairy calves was found to be no more distressing than control handling and blood sampling using both plasma cortisol concentration and behavioural indices of distress. However, there was a degree of between-animal variation in response - a small proportion of calves which received some treatments that were not expected to cause distress showed signs of mild distress. The reasons for these responses are unknown.

Disbudding six to eight week old Friesian dairy calves with a scoop caused a marked distress response which lasted for about five and a half hours, whereas the alternative method, the cauterising iron, was only slightly more distressing than control handling and blood sampling during the first one hour after disbudding.

Although administration of a local anaesthetic before scoop disbudding produced a marked reduction in plasma cortisol concentration during the first two hours after treatment there was little or no reduction in overall distress, as judged by plasma cortisol responses. However, prior administration of a local anaesthetic to calves disbudded by cautery effected a slight reduction in the distress response, decreasing it to near control levels.

The practical advice on method for these husbandry practices would be for tail docking, continued use of the rubber ring if tail docking is deemed necessary at all, and for disbudding, cautery alone or with local anaesthetic, if practically viable, would be recommended.

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