Stress related to transport of sheep for live export and slaughter: animal welfare implications

By Kate Chambers

Introduction

The *Cormo Express* incident focussed the spotlight on all stages of the transport of sheep (land and sea) and the effects of common management practices on the welfare of farmed sheep. It is an essential and unavoidable aspect of sheep management, to which there are no feasible alternatives. However, there are several areas in which changes to improve the welfare of these animals can and are being considered following the public outcry over the treatment of sheep aboard the *Cormo Express*. The Keniry Report (Keniry et al. 2004) made several important recommendations regarding the welfare of animals from the farm to the country of destination, for example The Review called into question the adequacy of all the systems and processes within the livestock export industry (p32). This paper will address one of those areas: the inherent stress involved in land transportation of live sheep, both for export and for slaughter.

Discussion

Investigation in this area has centred on the evaluation of stress and distress of animals in transit, using both physiological and behavioural responses to determine the levels of discomfort sheep undergo during transportation. It is empirically difficult to determine exactly when an animal is distressed. However, Cockram (2004) reviewed both physiological and behavioural responses to potential stressors, using the term 'distress' to imply that an animal in distress is consciously experiencing a negative emotional state. Plasma cortisol concentrations, body temperature and heart rate have been measured to evaluate physiological response to stressors (Baldock & Sibley, 1990; Cockram et al. 2000; Ingram et al. 2002). Assessment of behavioural responses involved observation of balance, posture, vocalisation and butting to evaluate the distress caused by transportation and the impact of this distress on their welfare (Cockram et al. 2004).

Lowe et al. (2005) investigated changes in ear pinna temperature as a useful measure of stress in sheep. Their study used exercise and isolation as stressors, and built on previous research that used core and peripheral body temperatures to evaluate stress in sheep (Ingram et al. 2002). Their premise is that decreases in ear pinna temperature reflect redistribution of blood flow away from skin to muscles, indicating activation of a sympathetic 'fight or flight' response. Lowe et al. (2005) hypothesised that changes in ear-pinna temperature (Tp) can be used as a sensitive measure of activation of the defence reaction, in response to a situation the animal perceives as threatening. They found that a stress-related decrease in Tp, was typically followed by elevation of vaginal temperature (representative of core temperature) for the duration of the stressful event. They also measured plasma cortisol and catecholamine concentrations, both established indicators of stress, finding that prolonged periods of decreased Tp were associated with secretion of cortisol and catecholamines. These results suggest that Tp can be used to evaluate the potential stressfulness of a situation, in a minimally invasive manner. This removes the potential for handler-induced stress, which has clouded previous results (Ingram et al. 2002).

Until recently, the lack of conclusive research using physiological responses has led to a lot of research on behavioural responses. Cockram et al. (2004) used behavioural parameters to investigate the effect of driver behaviour, driving events and road type on the stability and resting behaviour of sheep in transit. The conditions experienced by sheep during road transit can have a significant impact on their welfare: increasing risk of injury; and negative effects of confinement, crowding and inability to rest or feed. Behavioural parameters recorded in this study were: posture (standing, still, moving or lying down); rumination; orientation; loss of stability; and butting. The study showed that the risk of sheep falling increases when more than one event occurs, eg. harsh braking followed by gear change. The study concluded that

driver education was a critical step in the promotion of the welfare of animals in transit. Education should emphasize the role of the driver in ensuring the welfare of sheep during transport and the importance of careful driving to avoid injury and disturbance to sheep (Cockram et al. 2004).

While there has been some research into stress associated with sheep transportation more needs to be done. Knowles (1998) claims sheep have had relatively little research conducted into their responses to transport as a result of there being less value placed on the quality of sheep meat, and because the impacts of stress during transport are not as apparent as on pig meat or beef. Sheep are particularly tolerant of being transported, compared with other farmed species (Knowles, 1998).

Supporting the need for more research is the anecdotal evidence of wider community concern, as highlighted in the Keniry Report (p33). These concerns are now being addressed in new National Standards for the transportation of livestock (Anon, 2004), which cover preloading of livestock, loading of livestock for export, the land transport journey and unloading at registered premises. A travel plan is now required, covering vehicles, loading densities, duration of journey (including rest periods for the driver and the livestock), methods of mustering, loading and unloading, feed and water, weather conditions, route type and roads traversed. The study by Cockram et al. (2004) confirms the need for implementation of these standards to ensure the welfare of sheep in transit, and demonstrates that driving conditions have a significant impact on sheep in transit.

Conclusion

In summary, both behavioural and physiological responses occur when sheep are under stress, particularly stress associated with transport and handling prior to transport. The Keniry Report's recommendations address many areas that recent research has identified as compromising animal welfare during transportation. The study by Cockram et al. (2004) identified driver behaviour and driving events as having a significant impact on welfare of sheep being transported by road. The study by Lowe et al. (2005) confirms that physiological changes occur when sheep are subjected to situations they may perceive as threatening. This method could be used in the future to investigate responses to other situations, eg. transportation, and therefore objectively assess animal welfare using sound physiological measurements.

References

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