Reducing Weaning Distress in Dairy Cattle: Welfare Considerations for Cow and Calf

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Introduction

Cows naturally wean their calves gradually over the course of several months by progressively reducing suckling frequency and milk output. Concomitantly, calves shift to solid food and develop independence from maternal care (von Keyserlingk & Weary, 2007). The cow-calf bond formed extends well beyond weaning (Phillips, 2002). The artificial rearing of calves on commercial dairy farms contrasts starkly with this natural situation. Calves are commonly removed from their dams shortly after birth and fed milk from a bucket for two to three months. This essay discusses the distress reaction of dairy cows and calves to separation and effects of maternal deprivation in the context of current research.

Discussion

On dairy farms it is standard practice to remove calves from their dams within 24 hours of birth. However, there is evidence that calves benefit from a more extended stay with their mothers. Flower and Weary (2001) found calves left with their dams for two weeks showed increased weight gains and were more active in social situations compared with those separated on day one. (Conversely, delayed separation resulted in greater distress.)

A study by Stehulová *et al.* (2008) investigated the behavioural and heart rate responses of 46 dairy cow-calf pairs to separation at one, four and seven days of age. The roles of auditory and visual contact between cow and calf were also examined. In the experiment, half the cow-calf pairs were able to see and hear each other after they were separated, while the other half had no such contact. The post-separation behaviour and heart rate of each cow and calf were recorded. At three weeks of age each calf was put into a group pen with unfamiliar calves and observed. The results were used to assess the effect of each separation method on calf behaviour.

This study shows cows are more distressed when they can see and hear their calves after separation. They vocalised, put their heads outside their pens and sniffed walls and bedding more often than cows that did not have contact with their young. The mothers and calves separated on days four and seven also showed a more intense and prolonged behavioural reaction compared with those separated on day one. Additionally, calves removed from their dams later had a prolonged increase in heart rate following separation. These results indicate that a strong mother-young bond is formed by four days of age. Consequently, early separation with no further contact may have welfare advantages.

Yet Stehulová *et al.* (2008) also found there were advantages to delayed separation. When the calves were moved into the group pen at three weeks of age, those separated from their mothers at seven days appeared better equipped to cope with the new situation. The authors described a trade-off between the initial distress of delayed separation and the possible longer-term benefits to the calf. However, the aforementioned benefits were not clearly defined in this paper and the authors acknowledge this by directing future research into the area.

Orihuela and Hernández (2007) also examined the relationship between early ontogenetic experience and future behaviour. A total of 26 cow-calf pairs were used in the study. Half were fed whole milk from a teat bucket, while the other half were allowed to suckle from their dams during restricted periods of contact two hours after milking. When the calves reached eight weeks of age they were weaned from milk. Immediately after weaning, they were moved to an unfamiliar area and isolated in individual pens for three hours. Plasma cortisol samples taken every 30 minutes were used to determine their physiological stress responses.

Calves on the restricted suckling regime had significantly lower plasma cortisol concentrations compared with bucket-fed animals, indicating lower stress levels. The authors argue this was the result of enhanced oxytocin secretion in response to suckling. That said, the explanation for the reduced stress seen in nursing calves is probably multifaceted and this study fails to mention possible involvement of other aspects of the cow-calf interaction such as learned behaviour. Although the study's sample size is small, the results correspond to Stehulová *et al.*'s findings (2008). Allowing calves to suckle the residual milk from their dams after milking could be beneficial to the calf without affecting production. However, the study does not assess the behavioural response of cows and calves to repeated separations.

Research by Loberg *et al.* (2007) featured a different suckling system. Twelve selected dairy cows were taken out of production and each given four foster calves to nurse. The study examined the reaction of foster cows to both abrupt and two-step weaning. In the latter, calves were first prevented from suckling and later removed from their dams. In six of the cow-calf groups, the calves were fitted with a nose-flap at ten weeks of age to prevent them from suckling and removed from their mothers two weeks later. The other six foster cows were separated from their calves at ten weeks of age.

The cows whose calves were abruptly weaned showed a marked behavioural response, similar to that shown by the late-separated cows in Stehulová *et al.*'s. (2008) study. Results indicate that foster mothers form bonds with adopted calves. The two-step cows had a significantly milder reaction to weaning, demonstrating the welfare advantages of this approach. It should be pointed out that this study is limited by its small sample size. In addition, the calves were taken away from their birth mothers at seven days. According to the findings of Stehulová *et al.* (2008), it is preferable to remove them earlier.

Conclusion

Calves that spend additional time with their dams can cope better with challenges. This strongly suggests there are aspects of the cow-calf relationship fundamental to the wellbeing of the calf. Suckling systems are one way to provide calves with more extensive maternal care, but it is not yet determined whether time with foster cows is equally beneficial. The distress response of cows and calves to delayed separation may be alleviated through use of a gradual approach to weaning more akin to the natural process.

References

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