

Investigating the Necessity of the Presence of the Calf During Milking Dromedary Camels.

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Dromedaries are being increasingly used in Australia to provide milk for human consumption (NRMMC, 2010). Due to the reported health benefits of the milk (Agrawal *et al.*, 2009; Shabo *et al.*, 2005) The current camel population in Australia is estimated at over a million (DESWPC, 2010) making the Australian wild Dromedary population the largest in the world (NRMMC, 2010). The use of camels for the dairy industry is therefore seen as a practical approach to utilising this feral resource (NRMMC, 2010).

There are significant contradictions in the literature concerning the requirement of the presence of a calf for successful milking of the Dromedary camel. The first hypothesis tested in this study was that the presence of her own calf is more successful than no calf or a non-kin calf (without physical contact) for allowing milk let-down prior to machine milking. The second hypothesis was that full physical contact between the camel and her calf is more successful than no calf or a non-kin calf (with contact) for allowing milk let-down prior to machine milking. An additional aim was to investigate the sensory behaviours associated with successful let-down in the dairy camel.

For this study, 9 camels (on approximately day 365 of milking) and their respective year-old calves were used. Of these calves, an individual was randomly selected to act as a non-kin calf for a non-maternal camel cow. A total of twelve experimental sessions were conducted, six kin day sessions and six non-kin sessions. Kin days focused on the presence or absence of the kin calf. Whereas Non-kin days concentrated on the presence or absence of the non-kin calf. During the non-kin experiment, the ethical decision (based on possible stress to the cow if she wasn't suckled/milked) was made to introduce the kin calf if let-down was unsuccessful. The let-down and behavioural data for this kin calf was not taken. The barrier used in the experiment was a removable, colourless sheet of polycarbonate designed to block physical contact only and not impede other sensory communications between cow and calf. Let-down time and behavioural data were collected by direct observation on site and from subsequent video recordings.

There was an overall effect of treatment ($\chi^2=37.2$; $P<0.0001$), with the presence of the kin calf stimulating milk let-down on 65% ($n=47$) of attempts, compared to 20% ($n=64$) for the presence of the non-kin calf and 41% ($n=108$) when no calf was present. There was also a significant effect of the barrier ($\chi^2=24.8$; $P<0.0001$), when the barrier placed between the cow and calf, the kin calf elicited milk let-down on 48% of attempts, while the non-kin calf was unable to initiate let-down on any occasion. When the barrier was removed the kin calf successfully initiated let-down on 100% of attempts, while the non-kin calf was only successful on 40% of all attempts. The dominant behaviours associated with let-down were cow and calf vocalisations, vigilance and udder nudges.

	No Calf	Kin Calf	Non-Kin Calf
Overall*	41% (45/108)	65% (31/47)	20% (13/64)
Barrier	NA	48% (15/31)	0% (0/32)
No Barrier	NA	100% (16/16)	40% (13/32)

Values are percentage successful let-down (number of successful let-downs/total attempts). * Total for No Calf, total (No Barrier and Barrier) for Kin and Non-kin. Assumption: carry-over effects from previous treatment not taken into consideration.

Table 1 Milk Let-Down Success Across Treatment Conditions

The findings of the current study partially agree with the majority of literature that stated that the presence of the kin calf was “essential” for achieving milk let-down in Dromedary camels. However, it is clear from this study that it is still possible to achieve milk let-down using no calf or a non-kin calf. This research may act as a platform to launch future study into the management and understanding of Dromedary camels and may be used to improve industry practises within the camel dairy industry.

References

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