

Effect of Pair-Housing on the reactivity of pre-weaned dairy calves

Gaia Pesenti Rossi¹, Gloria Boldrin², Sara Barbieri¹, Emanuela Dalla Costa¹, Michela Minero¹, Elisabetta Canali¹

¹ Department of Veterinary Medicine and Animal Sciences, University of Milan, Lodi, Italy

² Department of Veterinary Science, University of Parma, Parma, Italy

Corresponding author: gaia.pesenti@unimi.it

Breeding calves in pairs can be a valid alternative to single pen housing; several studies have highlighted that calves raised in pairs have better growth and welfare than calves housed individually. The objective of this study was to investigate the effect of pair housing on calves' reactivity to a possible stressful situation.

Fifty-six Friesian female calves were enrolled since birth in 2 commercial dairy farms and housed either individually (n=28) or in pairs (n=28, 14 pairs). A startle test with 4 different novel objects (for example a plastic bottle filled with stones) was performed in the home pen of each animal, at 7, 21, 35 and 56 days of age. The startle test lasted 10 minutes and the following behaviours were analyzed: standing (s), lying (s), escape from the object (frequency), self-grooming (s), latency to approach the novel object (s) and time sniffing or licking the object (s). Pairwise comparison of the means with Bonferroni correction was conducted to analyze the housing effect on calves' behavior.

There was no effect of the housing system on standing, lying and escaping from the object.

Self-grooming was longer in individually housed calves compared to pair-housed at 7 (p=0.046) and 21 days of age (p=0.048). At 21 and 56 days of age, calves housed individually showed statistically shorter latency to approach the novel object (p=0.031 and p=0.001, respectively). At 21, 35 and 56 days of age individually housed calves showed longer time sniffing or licking the object compared to those housed in pairs (p=0.026, p=0.043 and p=0.001, respectively).

Novel objects likely served as enrichment for individually housed animals, as they showed significantly greater interaction with them. Calves housed in pairs seemed less interested in the objects but not scared, since escape attempts were very limited. These results suggest that the lack of stimulation in the home environment can be mitigated by the presence of a social companion. The behavior of pair housed calves during the test can be linked to improved adaptation, indicating that pair housing may be beneficial for enhancing their coping skills.

Research funded by Regione Lombardia, "Progetti pilota e sviluppo di innovazione" del Programma di Sviluppo Rurale 2014 – 2020 (CAGE-FREE Project).