

Associations between personality traits of dairy cows and their heifer offspring

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Personality traits of dairy cattle affect behavior and production, but it is not well known how heritable these traits may be. The objective of this study was to determine the correlation between personality traits of dairy cows and their heifer offspring. Twenty-three Holstein dairy cows had their personality traits assessed at 24 d prior to calving and 24 d after calving, and their offspring were assessed at 7 months of age. Personality traits of all animals were assessed through observation of behaviours in response to a novel environment, object, and human. Principal components analyses identified the traits of active, exploratory and bold in the pre-partum test conducted on dams (76% cumulative variance), and the traits of active and exploratory in the post-partum test (79% cumulative variance). Cow scores within the active and exploratory traits between these 2 tests were consistent ($P < 0.01$, $R^2 = 0.35$ and $P = 0.02$, $R^2 = 0.10$ respectively). From personality assessment in heifers, principal components analysis resulted in 3 traits from the novel object test (bold, exploratory-active, and social; 81% cumulative variance), and 2 traits from the novel human test (exploratory-active and social; 74% cumulative variance). Cows who were more exploratory pre-partum were associated with having heifers that were less bold in the novel object test ($P = 0.01$, $R^2 = 0.26$). Cows who were more active pre-partum tended to be associated with heifers who were more exploratory-active in the novel object test ($P = 0.06$, $R^2 = 0.16$), while cows who were more active post-partum tended to be associated with heifers that were more bold in the novel object test ($P = 0.07$, $R^2 = 0.15$).

Take home message: The data from this study indicates that there are some associations between the personality traits of cows and heifer offspring, which with further investigation may allow prediction of heifer personality and better inform young stock management.

Effects of weaning and tyndallized *Lactobacillus helveticus* supplementation on dairy calf behavioral and physiological indicators of affective state

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The objectives of this study were to determine if weaning of dairy calves would induce behavioral and physiological indicators of a negative affective state, and if tyndallized *Lactobacillus helveticus* (TLH) supplementation would reduce those indicators of negative affect during weaning. Male Holstein calves ($n = 23$) were enrolled in the 42 d study. Calves began weaning from 9 L/d of milk replacer (MR) on d 35 and received 6 L/d on d 35–36, 3 L/d on d 37–38, and 0.4 L/d on d 39–42, fed at 150 g of MR powder/L. Within room, calves were assigned to 1 of 2 treatments: 1) control (CON; $n = 11$) and 2) 5 g/d of TLH split over and mixed into 2 daily MR feedings from d 3–42 (TLH; $n = 12$). Lying behavior was tracked from d 21–41. On d 33, 37, and 41, infrared eye images were taken to determine maximum eye temperature (MET), saliva samples were collected to determine cortisol concentration, and play assessments were done. On d 34, 38, and 42, blood samples were collected to determine blood serotonin concentration. On d 38 and 39, calves were tested with a cognitive task. Weaning resulted in fewer, but longer, lying bouts ($P \leq 0.001$) and reduced play behaviour ($P \leq 0.001$). No changes in lying time ($P = 0.13$), MET ($P = 0.76$), saliva cortisol ($P = 0.75$), nor blood serotonin ($P = 0.60$) were detected with initiation of weaning. TLH supplementation was associated with lower lying time throughout ($P \leq 0.09$), and reduced play duration ($P = 0.04$) and higher salivary cortisol ($P = 0.01$) and MET ($P = 0.08$) during weaning. Only CON calves completed the cognitive task faster on d 39 ($P = 0.04$). No treatment differences in lying bouts ($P \geq 0.44$) or blood serotonin ($P \geq 0.26$) were detected throughout.

Take home message: Weaning appeared to induce negative affect, while the results of TLH supplementation on reducing those negative effects are inconclusive.