

Ano-genital distance is not affected by the estrous cycle stages in dairy cows

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Genetic selection for novel reproductive phenotypes could be a strategy in the sustainable improvement of fertility in dairy cows. Anogenital distance (AGD), one such phenotype, is the distance from the center of the anus to the base of the clitoris in dairy cows. Recent studies found that cows with short AGD (≤ 127 mm) are more fertile than cows with long AGD (> 127 mm) and that AGD has moderate heritability (0.37), making it a worthy candidate for further evaluation because most reproductive phenotypes have low heritability. In addition to heritability, a phenotype should be highly repeatable (the closeness of measurement taken at different time points by the same person). The estrous cycle is regulated by hormones such as estrogen and progesterone. We hypothesized that an increase in estrogen during proestrus may cause swelling of the vulva, altering the AGD. The objective was to know if AGD is affected by the estrous cycle stages in dairy cows. Accordingly, twenty lactating Holsteins were subjected to estrous synchronization. Ovaries were scanned (transrectal-ultrasonography), blood samples collected (to quantify progesterone), and AGD measured in triplicate (mean value used), every other day through an entire estrous cycle, i.e., from one ovulation to the next. The stages of the estrous cycle were classified as metestrus, diestrus, proestrus, and estrus based on ovarian structures and progesterone concentrations. The AGD measurements taken at different stages of the estrous cycle within the same animal did not differ ($P = 0.99$) and were highly correlated ($r = 0.98$; $P < 0.001$). In summary, AGD measurements at different stages of the estrous cycle were highly repeatable, indicating that AGD does not change through the estrous cycle. **Take home messages:** (1) AGD was not affected by different stages of the estrous cycle (2) Because of its high repeatability, AGD can be measured at any stage of the estrous cycle (3) This finding will be valuable if AGD becomes established as a fertility trait.