14. **Genetic analyses for rumination time and related resilience indicators in Chinese Holstein heifer**

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Rumination, as a basic behavior of ruminant, can potentially indicate resilience. Resilient cows likely keep stable duration of rumination to support the energy demand, whereas disturbances threaten sensitive cows with lower homeostasis. And early diagnosis of heifer resilience is possible by daily rumination time (DRT), it is useful for early individual selection and management. Therefore, the aims of this study were to define the resilience indicators in heifer, and then investigated if they can be used to genetically improve resilience. Through quality control like removing the data of first three days and 0.5% outlier detected by K-means cluster, 113,813 records on 2,633 Chinese Holstein heifer used in this study. A random regression model was used for DRT to estimate the daily genetic variance. The resilience indicators in heifer were defined with quantile polynomial regression model and its genetic parameters estimated by animal model. Results showed that DRT had a moderate heritability (0.17-0.38) and repeatability (0.24-0.79), while resilience indicators had a moderate to low heritability (0.03-0.16). According to the higher heritable indicators (Var_{dev}: 0.10; $r_{autocorrelation}$: 0.16), the resilient (226 cows) and non-resilient cows (247 cows) were grouped and other performance of two groups were compared. We found the cows within resilient group have higher percentage of normal calving ease (76.54% vs 65.99%), non-disease (73.01% vs 70.04%), one insemination time (60.62% vs 57.49%) compared with that of non-resilient group. These findings provide the basis for future work investigating the resilience indicators from rumination time for selecting for more resilient dairy cows.

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