frequency domain of HRV analysis: power of low frequency band (rho = 0.47), power of high frequency band (rho = -0.47), ratio of low to high frequency power (rho = 0.49).

In our conditions, 24 h recording was a good tool to define individual basal level of HR and variations due to the daily routine management; HRV efficiently detected expected differences in coping with stressful conditions (PR *vs* PL at milking) and was correlated to a known indicator of stress response (steps at milking). Implementing sensors of HRV to be used at farm level could be useful to monitor the individual response of cows to the internal and external challenges.

PO82

On-farm animal welfare assessment in beef cattle: an integrated approach

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The present study aims (i) to evaluate beef cattle welfare with an integrated approach as housing conditions and management practice change and (ii) to investigate the correlations between the parameters used and their applicability. A total of 15 Piemontese breed bulls reared in a tied stall housing system (farm A) and 15 Piemontese, 15 Blonde d'Aquitaine (from France) and 15 cross-breed (from Ireland) reared in pen for groups (farm B, C and D, respectively) were considered. A welfare protocol including a checklist and the "RIBECA" scoring system (formulated by CRPA) was prepared for the assessment of animal based measures (*e.g.* BCS, Avoidance distance test, ocular and nasal discharge, diarrhea) and resource based measures (*e.g.* appropriate housing and feeding, space, temperature). Some blood parameters were also analyzed: WBC, % of neutrophils, lymphocytes, monocytes, eosinophils, basophils, RBC, HGB, HCT, N/L ratio (ADVIA®120, Siemens), total protein, albumin, CK, creatinine, AST, LDH, cholesterol, glucose, triglyceride (ILab Aries, Instrument, Werfen) and dROMs (dROMs test, DIACRON INTERN. IT). Observations and blood samples were performed 2 times: 3 weeks after the arrival of the animals on the fattening farm (T0) and after 5 months (T1). Comparisons between animal groups within T0 and T1 were performed by One-way ANOVA and Kruskal-Wallis test, while data between T0 and T1 within each group were analyzed by Student's t and Wilcoxon tests (GraphPad Prism® software, $p < .05$).

Animal-based score was not significantly different between the farms, while total welfare score was "poor" for farm A (tied stall system), "fair" for farms B and D and "very good" for farm C. Irish cross-breed were the most fearful. Blood findings suggest that Irish cross-breed showed the worst adaptation (WBC, neutrophils, the N/L ratio, albumin, CK, glucose, creatinine and LDH increased at T1; $p < .01$) whereas Blonde d'Aquitaine cattle were well adapted (WBC, monocytes, eosinophils and basophils decreased at T1; $p < .01$, dROMs were significantly lower in this group; $p < .01$). The two groups of Piemontese bulls did not show significant differences.

The results obtained in the present study suggest that parallel use of both animal-based and resource-based measures is preferable for animal welfare assessment.

PO83

Identification of differentially expressed microRNAs in the peripartum of dairy cows: potential indicators of welfare and metabolic efficiency

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Genetic selection pressure on dairy cows has increased the incidence of metabolic disorders with important consequences on welfare and longevity. MicroRNAs (miRNA), a family of small non-coding RNAs with a key role in the regulation of gene expression, are interesting for characterizing the molecular basis of immune imbalances. The aim of this work was to investigate differences in miRNAs expression in dairy cattle during the highly susceptible to stress period of the peripartum. Forty metabolic and immunological parameters, classically used as indicators of increased risk of peripartum-related diseases, were recorded in six Holstein Friesian cows during 4 time-points of the peripartum (-21 ± 2; -3 ± 1;