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Blood transcriptional profiling of transition dairy cows and its relationships with uterine pathology

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Uterine disease within a week of parturition is present in up to 40% of dairy cows, with a severe financial loss derived from infertility, increased culling for failure to conceive, reduced milk production, and cost of treatment. The presence of an inflammation in the uterus during the breeding period could result in a suboptimal environment for embryo development.

To better understand molecular mechanisms regulating uterine diseases, high-throughput methodologies such as DNA microarrays are today more and more used to snapshot the endometrium of dairy cows.

Therefore, the objectives of this study are:

- characterization of blood surrogate tissue transcriptome and serum biochemical markers in healthy transition cows as well as in animals developing endometritis during the early postpartum period;
- investigate biochemical markers (i.e., pro- and anti-inflammatory cytokines, acute phase proteins, APPs, and biomarkers of oxidative stress) and gene expression profiling in uterine specimens from postpartum cows either healthy or with endometritis;
- correlate bacteriology and cytology to improve endometritis diagnosis in transition dairy cows;
- to check for correspondence between blood and tissue transcriptome to identify potential surrogate biomarkers.