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Incidence of uterine disorders and gene expression of immunological markers in high- yielding Holstein cows supplemented or not with polyunsaturated fatty acids during peripartum period

Luisa Cunha Carneiro ¹, Priscila Assis Ferraz ¹, Beatryz Fonseca da Silva ², Oglenia Pereira Ramos ², João Paulo Saut ², Eneiva Carla Carvalho Celeghin ¹

¹ USP - Universidade de São Paulo (Campus Fernando Costa), ² UFU - Universidade Federal de Uberlândia (Uberlândia - MG)

Resumo

The aim of this study was to investigate whether supplementation with polyunsaturated fatty acids (PUFAs), especially omega 3 (n-3), affected the incidence of uterine disorders as well as altered the gene expression of inflammatory cytokines during 28-35 days in milk (DIM) in high-yielding Holstein cows. A total of 36 animals were divided into two groups, as follows: group (1) control, those animals that received a supplement without PUFAs; and group (2) PUFA, those animals that received a supplement similar to group 1 + PUFA added. Supplementation of both groups was provided at the same times three times a day from 30 days before parturition until 35 days postpartum. To evaluate uterine disorders, the presence of fetal membrane retention, puerperal metritis and clinical endometritis (both evaluated by Metricheck® and ultrasound) and subclinical endometritis (evaluated by endometrial cytology) were observed. To explore immune function, only those animals free of uterine affections or any disorder were used. For this, uterine swab samples were collected during 28-35 DIM for further analysis by performing a real-time polymerase chain reaction – qRT-PCR. For qualitative and unpaired variables Fisher's test was used at a significance level of 5%. For quantitative variables, data normality was initially evaluated using the Anderson Darling or Kolmogorov-Smirnov normality test at a significance level of 5%. To compare two unpaired variables, the unpaired T test was used for variables with normal distribution (parametric variables) or the Mann-Whitney test for variables with non-normal distribution (non-parametric variables). All tests were evaluated with a significance level of 5% ($P < 0.05$). No significant differences were observed between the control and PUFA groups regarding uterine conditions such as fetal membrane retention (0.0% vs. 0.0%), puerperal metritis (0.0% vs. 5.9%), clinical endometritis (17.6% vs. 13.6%) and subclinical endometritis (3.5% vs. 4.1%) respectively. Furthermore, the gene expression of IL-6, IL1- β and CCL5 was similar ($P > 0.05$) when comparing the control and PUFA group. Therefore, it was concluded that supplementation with PUFAs for high- yielding Holstein cows was not able to interfere in cases of retention of fetal membranes, metritis and endometritis, nor to affect the immune system through the gene expression of inflammatory cytokines such as IL -6, IL1- β and CCL5.

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