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The Effect of Supplemental Fish Oil and Canola Oil from Transition Period to Early Lactation on Immunology Responses in Early Lactating Holstein Dairy Cows

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The study was designed to test the effect of including fish oil and canola oil from transition period to early lactation on immunology responses in Holstein dairy cows. Holstein cows were randomly assigned in 1 of 2 treatments: 1) 0% oil (control, n=9) and 2) 2% oil (supplemented, 1% fish oil-1% canola oil, n=9). Cows were blocked by parity, previous 305-2 x milk production and expected calving time. Using vacutainer tubes, blood samples were collected weekly from -2 to 7 week relative to calving via venipuncture of coccygeal vessels before the morning feeding to monitor Complete Blood Count (CBC). The blood samples for CBC were kept in room temperature until analyzing for CBC. Complete blood counts were automatically determined with a hematology analyzer (Sysmex K1000, TOA Ltd., Tokyo, Japan). The data repeated in time were analyzed by using a mixed model (PROC MIXED, SAS Inst. Inc., Cary, NC) for a completely randomized design with repeated measures. The number of red blood cells (p=0.99; 5496900 ± 133000 and 5495200 ± 132300 / μl , respectively), number of white blood cells (p=0.45; 6602 ± 376.91 and 7008.68 ± 373.07 / μl , respectively), hemoglobin (p=0.56; 8.15 ± 0.20 and 7.98 ± 0.20 g/dl, respectively), platelet (p=0.67; 349100 ± 26010 and 333220 ± 25720 / μl , respectively), hematocrit (p=0.65; 25.11 ± 0.58 and $24.73 \pm 0.58\%$, respectively), number of lymphocyte (p=0.28; 3993 ± 284 and 4448 ± 302 , respectively), number of monocytes (p=0.64; 1865 ± 213 and 1718 ± 130 , respectively), number of neutrophil (p=0.067; 3944 ± 180 and 3413 ± 201 , respectively), and number of eosinophil (p=0.32; 190 ± 29 and 145 ± 32 , respectively) were similar between control and supplemented diets. The results of this study demonstrate that feeding a combination of fish oil and canola oil pre- and postpartum had no apparent effects on immunological parameter measured as total cell count.

Key Words: Fish oil, Canola oil, Immunological responses, Dairy cows