

English Abstract: Thesis No: 9841 Phd of Science in Midwifery Urmia University

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Title of thesis: Evaluation the effect of linseed oil ca-salts feeding on reproductive indices of Qezel ewes during non-breeding season.

Summary:

The current study was designed to evaluate the effect of sequential low and high dietary linseed oil (LO; as omega-3 enriched fatty acid; FA) before and post insemination, respectively, on different plasma variables of ewes. Fat-tailed Qezel ewes were assigned randomly to be fed a diet enriched with 3% LO (n=30) or the saturated FA (SFA; n=30) three weeks before insemination (Day 0). The lipogenic diet supplemented with 6% LO or SFA was fed after insemination until Day +21. The control ewes were fed an isocaloric and isonitrogenous diet with no additional FA during the study. Estrus was synchronized by inserting a vaginal sponge (Spongavet®, HIPRA, Spain) for 12 days + 500 IU eCG (Gonaser®, HIPRA, Spain), and ewes were inseminated via laparoscopic approach 56-59 h after eCG injection. The size of ovarian structures was assessed by transvaginal ultrasonography at -21, -14, -2, 0, and +10 days. Blood samples were collected weekly to measure the plasma's different biochemical variables and FA profile. Treatment did not affect the amounts of glucose, aspartate aminotransferase, alanine aminotransferase, lactate dehydrogenase, interleukin-10, interleukin-2, and non-esterified FA ( $P > 0.05$ ). Conversely, concentrations of triglyceride, cholesterol, tumor necrosis factor-alpha, and insulin-like growth factor-1 were higher in SFA-fed ewes relative to control animals ( $P < 0.05$ ). LO feeding resulted in greater amounts of n-3 FA isomers in plasma, while higher amounts of stearic acid were detected in SFA fed group 0 and +21 ( $P < 0.05$ ). The number of ovarian follicles and corpora lutea also were not affected by treatment. Other reproductive variables were not affected by treatment except for the reproductive rate. It seems that LO or SFA feeding of fat-tailed ewesperi-insemination period was not superior to the isocaloric non-additional fat diet provided for the control group during the non-breeding season.

**Keywords:** Linseel Oil, Saturated FA, Laparoscopic insemination, Ewe Reproduction