

PROGESTERONE LEVELS IN GOATS USING NORGESTOMET IMPLANTS AS PART OF AN ESTROUS SYNCHRONIZATION, SUPEROVULATION PROTOCOL DURING THE BREEDING SEASON

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In goats, exogenous progesterone is used during the breeding season as part of estrous synchronization and superovulation protocols to produce timed estrus for breeding and artificial insemination programs, as well as enable precisely timed production of oocytes and embryos used in cloning, transgenic, and cryopreservation programs. During the breeding season, progesterone levels in cycling goats have been reported to average over 6 ng/ml for 11–12 days. High progesterone levels prevent the luteinizing hormone surge, and inhibit the formation of dominant follicles. This study was designed to determine the levels of endogenous progesterone produced during the time of an exogenous progestagen ear implant (norgestomet, Crestar[®]) used in an estrus synchronization and superovulation protocol, and compare them to levels of progesterone produced during the natural estrous cycle. Due to the fact that norgestomet levels could not be assayed in this laboratory, it was not possible to correlate exogenous progesterone levels with ovulations, ova collected, or non-ovulated follicles.

Fifteen experimental and ten control animals were used. The experimental does received the following estrous synchronization, superovulation protocol, Day 0: insertion of norgestomet ear implant (Crestar Implant[®], Intervet, 3 mg norgestomet), Day 7: 50 mg PGF_{2α} (Lutalyse, Upjohn, 50 mg/ml), Day 12–15: 256 mg follicle stimulating hormone (Folltropin-V, Bioniche Animal Health, 400 mg/20 ml) or 10.56 mg follicle stimulating hormone (Ovagen, ICPbio, 17.6 mg NIADDK oFSH-17 per vial), Day 14: Crestar[®] implant removed, Day 16: 50 mcg GnRH (Cystorelin, Abbott Labs, 50 mcg/ml) and Day 17: oocytes surgically collected. Controls did not receive any synchronization or superovulation regime. Blood was collected daily from Day –2 or –3 to Day 17. Progesterone levels were determined using a solid-phase radioimmunoassay progesterone test (Coat-A-Count Progesterone Kit, Diagnostics Products Corporation).

Three patterns of endogenous progesterone emerged. Four animals produced little progesterone before or

during the cycle. All four animals exhibited heats and were used for surgical oocyte collection. Five animals started with 2 ng/ml or less of progesterone on the day of implant insertion, and levels gradually rose to 5–7 ng/ml. Two of these five animals did not exhibit heats and were not used for oocyte collection. Six animals started with 6–10 ng/ml of progesterone and exhibited falling levels of progesterone. One of these six animals was not used for surgical oocyte collection. None of the patterns seen under norgestomet implants resembled the levels and patterns of progesterone produced during natural estrus cycles.

This study showed that during the breeding season, norgestomet can be successfully used as part of an estrous synchronization and superovulation protocol in goats, but the levels and patterns of endogenous progesterone exhibited during this protocol do not resemble those produced during the normal estrous cycle. The data suggests that the patterns of endogenous progesterone are related to the progesterone levels at the time of implant insertion. Work still needs to be performed to determine if the exogenous progesterone levels are affecting the levels and patterns of endogenous progesterone, and how this might influence the quantity and quality of oocytes and embryos produced during estrous synchronization and superovulation.

Keywords: Goats; Progesterone; Norgestomet; Superovulation; Estrous synchronization

Competitive Session

EFFECT OF MELATONIN IMPLANTS ON CONTROL OF REPRODUCTION IN THE DOMESTIC CAT (*FELIS CATUS*)

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The female domestic cat is a seasonal breeder when exposed to natural photoperiod, with ovarian activity ceasing under decreasing photoperiod and resuming with increasing photoperiod. Melatonin secretion is controlled by the prevailing photoperiod, with higher concentrations during the dark phase. Previous research has shown that exogenous melatonin administered intravenously suppressed ovarian activity in queens maintained under a 24 h light photoperiod. Whereas intravenous melatonin administration in queens may no