The aim of this study was to establish optimal hormonal protocols for recovery of oocytes in *Cuniculus paca* (spotted paca) for in vitro maturation. We hypothesized that gonadotropin treatments would induce greater ovarian stimulation, oocyte recovery and in vitro oocyte maturation than untreated animals. Eight healthy adult females were subjected to each of four treatments to stimulate ovarian follicular growth. All females were subjected to a short estrus synchronization protocol, adapted from studies in small ruminants using a single dose of 45 mg of injectable progesterone. Ovarian stimulation was carried out as follows: in Group TFE (FSHp and eCG), animals were treated with a single dose of 80 mg of follicle stimulating hormone (FSHp) and 200 IU of equine chorionic gonadotropin (eCG) intramuscularly on day 6 after application of progesterone; in Group TF (FSHp), they were treated with a single dose of 80 mg of FSHp intramuscularly on day 6 after application of progesterone; in Group TE (eCG), they were treated with 200 IU of eCG intramuscularly on day 6 after application of progesterone; and in Group TC (saline solution), 1 ml of saline solution was administered to control does. All females received a single intramuscular injection of 0.075 mg d-cloprostenol on day 6. The laparoscopic ovum pick-ups (lapOPUs) were performed between 22 to 26 hours after gonadotropin treatments. For follicular punctures, an 18-gauge 3.5 inch long needle attached to a vacuum system with pressure not exceeding 65 mmHg was used. Oocytes were recovered into 50-mL centrifuge tubes with medium composed of PBS supplemented with 10 IU/mL of heparin and kept at 36°C. All recovered oocytes were placed into maturation medium and incubated for 24 h according to procedures previously described (Mohammadi-Roushandeh et al., 2006). After incubation, oocytes were fixed in a solution of acetic acid:ethanol (1:3) and stained with 1% (wt/vol) lacmoid for assessment of nuclear maturation according to Wang et al., 1988. Data are expressed as mean ±SD and were analyzed using ANOVA with *p* ≤ 0.05. There were no differences among the mean number of observed follicles, aspirated follicles and oocytes recovered per treatment, TFE = 17.63 ± 14.51; 12.0 ± 9.8; 5.5 ± 5.5; TF = 10.75 ± 9.59; 10.0 ± 8.5; 4.6 ± 5.2; TE = 12.75 ± 12.37; 11.0 ± 11.0; 2.1 ± 3.5, and TC = 14.88 ± 15.53; 13.0 ± 13.0; 5.3 ± 5.5; respectively. Oocyte maturation rates did not differ among groups: TFE = 40.0%; TF = 57.1%; TE = 46.1%; and TC = 20.0%; except, TF oocytes had greater maturation rates than TC oocytes (57.1% vs. 20.0%, respectively; *p* ≤ 0.05). Despite the feasibility of the procedure, further studies are needed to develop and refine hormonal protocols for oocyte recovery and in vitro maturation in this species.

**Keywords:** Gonadotropin, laparoscopy, oocyte, ovum pick-up, spotted paca.

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