



A172 Folliculogenesis, oogenesis, and superovulation

### **Study on nuclear maturation kinetics of bovine oocytes with different degrees of competence**

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Oocyte nuclear maturation is a complex process involving modification of chromatin from the germinal vesicle stage to metaphase II. Studies have reported that oocytes from large follicles have greater developmental capacity than oocytes derived from small follicles, resulting in higher rates of in vitro embryo production. The aim of this study was to evaluate the chromatin condensation and nuclear maturation kinetics in oocytes with different degrees of competence. For this, small follicles were used (SF= 1.0-2.9 mm diameter follicles with less competent oocytes; n=120) or large (LF= 6.0-8.0 mm with more competent oocytes; n=130) dissected from the ovarian cortex were (Caixeta ES et al., *Reprod. Fertil.* 21,p.655–664, 2009). The control group (Con; n=151) was recovered by aspiration from 3 to 8 mm follicles. The COCs obtained from each treatment were fixed at 0 and 24 hours of maturation and then stained with lacmoid to identify meiotic stage: GV (GV0, GV1, GV2, GV3; Lodde et al., *Mol. Reprod. Dev.* 74, p.740–749, 2007), GVBD, MI, AI, TI, MII and abnormal. The data were analyzed by Chi-square ( $P < 0,05$ ). The results showed that at 0 hour of maturation, a higher percentage ( $P < 0,05$ ) of SF (98.33%; 59/60) were at GV stage than the Con (89.77%; 79/88). At the 24 h of culture, the Con and LF groups did not present any other oocyte in GV, and the LF group presented 93.4% (57/61) of MII. The SF group still had 10% (6/60) oocytes in GV ( $P < 0,05$ ) and only 81.7% (49/60) in MII. Regarding to the degrees of chromatin condensation at GV stage, the SF (20%; 12/60) showed a higher percentage of GV0 than the Con (2.27%; 2/88) group. However, the more competent and the less competent groups did not differ ( $P < 0,05$ ) for the percentage of oocytes in GV1, GV2 and GV3. It can be concluded that SF have the lowest capacity to reach metaphase II, and that the degree of chromatin condensation in GV, when evaluated by lacmoid stain, is not a good parameter to estimate oocytes competence in cattle.