THE INFLUENCE OF EWE SERUM ON in vitro OOCYTE MATURATION AND EARLY DEVELOPMENT OF OVINE EMBRYOS

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ABSTRACT


The experiments were carried out to study the influence of different sera on in vitro maturation and early development of ovine embryos. Sera used in this study were FLS (Fetal Lamb Serum), ewe serum collected on Day 0 (ES-D0) and Day 6 (ES-D6) of oestrus cycles. Ovine oocyte were matured and cultured in TCM-199 supplemented with 10% of different sera. Results of this experiment showed that supplementation of ES-D0 or ES-D6 could support maturation rate (Metaphase-II) at 68.7% and 67.6%, respectively better than FLS (32.9%). The fertilization rate was significantly higher (p<0.01) in medium supplemented with either ES-D0 or ES-D6 than FLS, (30.7%, 65.4%, and 65.8% for medium supplemented with FLS, ES-D0, and ES-D6, respectively). On the other hand the effect of ES-D0 supplementation followed by ES-D6 on IVM and IVC yielded in embryos cleavage (47.6%) higher than those supplemented with ES-D6 followed by ES-D6 (41.6%) and ES-D0 followed by ES-D0 (28.7%). In conclusion, supplementation of ES-D0 or ES-D6 into maturation and culture medium have given better results on both maturation rate and early embryonic development.

Key words: IVF, ovine embryos, ewe serum

INTRODUCTION

In vitro maturation or in vitro fertilization (IVM/IVF) is a critical step for early development of embryos. The effect of various factors including organic salt (Kim et al., 1993; Pinyopummintr and Bavister, 1991), carbohydrates (Kim et al., 1993; Lim et al., 1994), amino acids (Takahashi and First, 1992); macromolecules and serum component (Bavister et al., 1992, Pinyopummintr and Bavister, 1991), growth factor (Flood et al., 1993) and vitamins (Pinyopummintr and Bavister, 1991) on the preimplantation development embryos have been investigated.

Several different media have been used for successfully maturing cow or sheep oocyte in vitro. For full development and subsequent fertilization the medium must contain a serum (First and Parrish, 1987). Serum as a protein supplement provided a superior environment for bovine oocyte maturation when compared with bovine serum albumin (BSA) or Fetal Calf Serum (FCS) (Lebfried et al., 1986; Sanbuisho and Threlfall, 1985). Blastocyst development from bovine follicular oocyte was stimulated fol-