Title of thesis: Comparative efficacy of different media additives on in-vitro maturation and fertilization of ovine.

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Abstract

The present study comprised of three major parts: to evaluate oocyte recovery rates and their quality from ovine ovaries collected at local abattoir using aspiration and slicing, to compare in vitro maturation rates of different categories of oocytes in TCM-199 alone or supplemented with media additives (10% of FCS and 10% ESS) and to standardize in vitro fertilization rates of matured oocytes in these media additives.

A total of 200 ovaries were studied and oocytes (1922) of different category, irrespective of method of recovery, side of ovary and presence / absence of corpus luteum were retrieved from these ovine ovaries. The different category oocytes matured in vitro in TCM-199 with or without media additives. The in vitro maturation (IVM) and in-vitro fertilization rates were compared.

The average recovery rates of category I, II, III and IV oocytes from ovaries having corpus luteum were 1.98 ± 0.16, 2.44 ± 0.16, 1.74 ± 0.15 and 0.78 ± 0.10 compared to 3.59 ± 0.20, 3.27 ± 0.14, 2.88 ± 0.16 and 1.71 ± 0.13 from ovaries without corpus luteum, respectively. Overall maturation rates in TCM-199 alone and / or supplemented with 10 per cent FCS or 10 per cent ESS was 37.28, 60.94 and 59.56 per cent, respectively.

It was concluded that recovery rates of good quality and total oocytes retrieved after slicing were higher than aspiration and slicing of ovary was less time consuming and effective as compare to aspiration without compromising with their quality. There was no variation in number of good quality and total oocytes recovered between left and right ovary. Presence of corpus luteum on ovary adversely affected oocyte recovery rates. The optimum maturation rates were obtained following culture of immature ovine oocytes for 27h. The IVM and IVF rates of good quality oocytes were higher vis-à-vis poor quality oocytes. Supplementation of TCM with 10 per cent FCS or 10 per cent ESS
as additives enhanced IVM and IVF rates of ovine oocytes compared to oocytes cultured in TCM alone. The IVM and IVF rates of oocytes cultured either in TCM supplemented with 10 per cent FCS or 10 per cent ESS were comparable. ESS was more economical than FCS, as an additive.