

Simple biophysical sperm treatment methods to improve cleavage rate of Hanwoo oocytes during *in-vitro* fertilization

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Purpose: Sperm treatment prior to *in-vitro* fertilization reaction is a major factor to promote the fertilization rate in IVF. In this respect, this study was performed to find out any easy biophysical sperm treatment method which can improve fertilization rate in Hanwoo IVF.

Materials and Methods: The Hanwoo sperm treated by two filtration methods(glass wool/Sephadex) and control sperm were reacted for IVF for 5~6 hours with Hanwoo oocytes which had been incubated for *in-vitro* maturation(IVM) for 18~22 hours. The cleavage rate and blastocyst rate were investigated, respectively, on day two and 7~9 days after IVF reaction. In the same way, the cleavage rate and blastocyst rate were investigated for the Hanwoo oocytes reacted for IVF with the sperm treated by glass wool filtration or Percoll gradient separation.

Results: In the result of HOS test and CFDA/PI stain for Hanwoo sperm according to different sperm treatment, the viability was denoted considerably higher in glass wool filtration than Sephadex filtration and Percoll gradient separation. The Cleavage and Blastocyst rate according to control, glass wool filtration and Sephadex filtration after *in-vitro* fertilization of Hanwoo oocytes was denoted considerably higher in glass wool filtration than Sephadex filtration and control group($p<0.05$). The Blastocyst rate of cleaved oocyte according to Percoll gradient separation and glass wool filtration, after *in-vitro* fertilization of Hanwoo oocytes was denoted considerably higher in gGlass wool filtration than Percoll gradient separation($p<0.05$).

Conclusion: These results indicated that the higher viability of sperm was achieved by biophysical sperm treatment such as glass wool filtration or Percoll gradient separation to be compared with control and that the sperm treated by glass wool filtration could improve the cleavage rate of Hanwoo oocytes and also the blastocyst rate than that of control, and that this method may be consequently used as the sperm treatment method for IVF reaction to enhance the fertilization rate of Hanwoo oocytes.

Key words: sperm treatment, Glass wool filtration, Sephadex, Percoll gradient separation

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