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Reduction of Polyspermy in Porcine *in vitro* Fertilization by Modified Swim-UP Method.

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The high incidence of polyspermic fertilization is one of the major causes lowering the overall efficiency of porcine IVF. The common procedure for IVF involves the co-culture of both gametes in the medium drop, which increases sperm concentration and incidence of polyspermy. Therefore, the present study was carried out to increase the efficiency of porcine IVF by reducing polyspermy using a modified swim-up method. This method modifies conventional swim-up washing by placing oocytes directly at the time of washing. Sperm pellet was prepared in the tube and mature oocytes were placed on cell strainer with 70 ㎛ pore size (Falcon 2350) at the top of the tube. After insemination, the oocytes were stained for examination. Also, the developmental potential of fertilized embryos was measured to evaluate for the feasibility of this method. While having similar penetration rates in both methods (86.67±2.36% to 83.33±1.36%), there was a significant reduction of polyspermy in modified swim-up method (17.50±1.60%) compare to the control (44.1±3.70%) ($p<0.05$). Subsequent culture showed higher rate of blastocyst formation in modified swim-up method (20.44±0.99%) than the control (15.73±3.26%) ($p<0.05$), even though there was no significant difference. These results suggest that, by controlling the number of spermatozoa reaching the oocytes, porcine oocytes might be protected from polyspermy *in vitro*. Also, the developmental potential of the fertilized embryos using this method could be improved by increasing the pool of spermatozoa with better quality. Further optimization of the procedure required to implicate this method in routine porcine IVF.

Key words) *Porcine, In Vitro Fertilization(IVF), Polyspermy*