

**The Effect of Fertilization-Promoting Peptide on Fertilizing Ability and Glycosidase Activity *In Vitro* of Frozen-Thawed Boar Spermatozoa**

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This study evaluated the effect of fertilization-promoting peptide (FPP) on fertilizing ability and glycosidase activity *in vitro* of spermatozoa frozen-thawed in pig. Using chlortetracycline fluorescence analysis, the various glycosidase analyses and the oocyte penetration test, we have obtained evidence that FPP can promote the fertilizing ability and glycosidase activity of frozen-thawed spermatozoa *in vitro*. When frozen-thawed spermatozoa was washed with different concentrations of FPP, there were significantly ( $P < 0.05$ ) more acrosome-reacted in medium with 100 nM than 0, 50, 200 and 400 nM. The penetration rates were also highest in medium containing with 100 nM FPP ( $P < 0.05$ ). On the other hand, the  $\beta$ -N-acetylglucosaminidase activity was at least twofold higher than other glycosidase. In same glycosidase, however, there were no difference in medium with different concentrations of FPP. In another experiment, spermatozoa preincubated in medium with or without FPP for 0, 1, 2, 3 and 4 h were inseminated with oocytes matured *in vitro*. The percentages of spermatozoa that reached acrosome reaction were affected by preincubation and were higher in medium with that than without FPP. When oocytes were inseminated with spermatozoa preincubated in medium with and without FPP during the different periods, however, penetration rates were decreased with preincubation periods of spermatozoa. On the other hand, when the sperm-oocyte were cultured for 4, 8, 12, 16, 20 and 24 h, the penetration rates were higher in spermatozoa preincubated with that than without FPP and had a tendency to increase as time of culture periods. However, The activities of  $\alpha$ -fucosidase,  $\alpha$ -mannosidase,  $\beta$ -galactosidase and N-acetyl- $\beta$ -D-glucosaminidase were higher in medium with that than without FPP regardless of periods of sperm preincubation and sperm-oocyte culture. These results suggest that FPP may play a positive role in promoting of sperm function and glycosidase activity *in vitro* in pig. This work was supported by Korea Research Foundation Grant (KRF-99-041-G00056 G4103).

(Key words) **fertilizing ability, FPP, glycosidase activity, spermatozoa, pig**