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In Vitro Development of Porcine Parthenogenetic Embryos Using Six Different Culture Systems

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The objective of this study was to evaluate six different culture systems for porcine parthenogenetic embryos.

Porcine oocytes were selected at 44 h after start of maturation. After denuding, only the oocytes showing 1st polar body were electrically activated using single pulse of 2.0 kV/cm for 30 μs and followed by 1.9 mM 6-dimethylaminopurine treatment for 3.5 h. Then, the activated oocytes were cultured in six different culture systems (Table 1). After *in vitro* culture, all embryos were stained with Hoechst33342, and the embryonic development was monitored under the fluorescent microscope. The results were shown in Table 1.

Table 1. The development of porcine parthenogenetic embryos using six different culture systems.

Media* contained with		Total	No. (%)	No. (%)	Cell numbers of blastocysts (mean ± SE)
Day 1-4 of culture	Day 5-7 of culture		Cleavage	Blastocysts	
PVA[x]	PVA	156	121 (77.6)	19 (12.2)[a]	22.4 ± 7.5
PVA	BSA[y]	140	112 (80.0)	36 (25.7)[b]	18.5 ± 5.3
PVA	FBS[z]	122	98 (80.3)	16 (13.1)[a]	20.1 ± 7.8
BSA	BSA	130	104 (80.0)	32 (24.6)[b]	23.0 ± 9.4
BSA	FBS	146	112 (76.7)	7 (9.6)[a]	18.9 ± 4.6
FBS	FBS	106	85 (80.2)	11 (10.4)[a]	16.5 ± 6.2

*Basic culture medium: NCSU-23 (North Carolina State University-23).

[x]Poly vinyl alcohol (0.1%; w/v); [y]bovine serum albumin-fatty acid free (0.4%; w/v); [z]fetal bovine serum (10%; v/v).

[ab]Different superscript differ significantly ($p<0.05$).

This study indicates that serum in culture medium was not beneficial for the development of porcine parthenogenetic embryos in this culture system. Also, exposure to the completely defined condition (PVA added) did not reduce the developmental competence of the embryos until 4-day of culture *in vitro*.