

## Amino Acids Supplemented with Culture Medium Stimulated On Development of Porcine Embryos

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This study was carried out that to investigate the effects of amino acids supplemented with culture medium on development of porcine embryos cultured in vitro.

Cumulus oocyte complexes (COCs) were cultured in the maturation medium containing hormones ( $0.5\mu\text{g}/\text{ml}$  LH,  $0.5\mu\text{g}/\text{ml}$  FSH and  $1\mu\text{g}/\text{ml}$  estradiol-17 $\beta$ ) for 20-22 h at 39°C in an atmosphere of 5% CO<sub>2</sub> in air. Subsequently, COCs were cultured in hormone-free maturation medium for 20-22 h. After maturation for 40-44h, oocytes were removed cumulus cells by pipetting and cultured with epididymal sperm for 5 h in the mTBM. Embryos obtained were divided in 4 groups : (1) cultured in NCSU 23 containing 0.4% BSA to blastocyst stage(Control) , (2) essential amino acids (EA), (3) non-essential amino acids (NA), (4) mixture of essential and non essential amino acid (EA+NA). All treated groups(2-4) were used a glucose free NCSU 23 medium supplemented with pyruvate (0.33 mM), lactate (4.5 mM) to morula stage. From morula to blastocyst stage embryos of all treated groups were cultured in NCSU 23 containing 0.4% BSA.

The rates of cleaved oocytes at 48 h after IVF were from 82% to 88% in the groups of control, EA, NA and EA+NA, respectively. The in vitro developmental rates into blastocysts in the groups of EA and EA+NA were significantly ( $P<0.05$ ) higher than those of group of control (35.1, 35.4 vs. 19.4% , respectively), however, no significant ( $P<0.05$ ) between control and NA.

In conclusion, supplemented with essential amino acid or mixture of essential and non essential amino acid in the culture medium at morula stage increased the rate of development to blastocyst on in vitro produced porcine embryos.

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