P-12 Effects of the Various Addition and Exclusion Time of Glucose on Development of Mouse Two Cell Embryos

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Background & Objectives: This study was conducted to investigate the effect of the various addition and exclusion time of glucose on embryonic developmental capacity of 2 cell embryos in mice.

Method: Two cell embryos were recovered from ICR female mice (3~4 weeks) at 46~50 h after hCG 5 IU injection and cultured in Dulbecco's Modified Eagle Medium (MEM, no glucose) supplemented with 20% human follicular fluide (hFF) and with or without glucose(time of addition ~ time of exclusion, Control: no addition, A: 24~72 h, B: 24~48 h, C: 48~72 h, D: 0~72 h, E: 0~48 h, F: 0~24 h, 48~72 h, G: 0~24 h) for 72 h. At the end of the culture period, 487 blastocysts were assessed for mean cell number, inner cell mass (ICM) cell number, Trophectoderm (TE) cell number, %ICM of total cell and ICM : TE ratio of blastocysts by means of differentially staining.

Results: The rates of morula and blastocyst formation at 24 h and 48 h of culure was not statistically different in all groups. The zona intact blastocyst (ZiB) rates were higher ($p<0.05$) in group B than control. However, the zona escape blastocyst (ZeB) rates were not significantly different in all groups. At 72 h, total blastocyst (ZiB + ZeB) formation rates were not significantly different in all groups. The mean cell number was not significantly different in all groups. ICM cell number was higher ($p<0.05$) in group F than control, group A, B and G. TE cell number was higher ($p<0.05$) in control than group A and D. The %ICM was higher ($p<0.05$) in group C, D and F than control. The ICM : TE ratio was not significantly different in all groups. There was no difference between control and glucose groups in the rates of total blastocyst formation and development to ZiB and ZeB. Also there was no difference no significant difference was observed in the mean cell number, ICM cell number and ICM : TE ratio. However TE cell number was higher ($p<0.05$) in control than glucose group and %ICM was higher ($p<0.05$) in glucose group than control.

Conclusions: In conclusion, glucose added in culture medium was not inhibitory effect on the blastocyst formation but glucose added for 48~72 h in culture medium increases %ICM of blastocysts in mice.