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Effects of the Various Addition and Exclusion Time of Glucose on Development of Mouse 2 Cell Embryos

Sung Baek Park[1], Kee Sang Park[2], Taek Hoo Lee[2],
Sang Sik Chun[2] and Hai Bum Song[1]

Deagu University

This study was conducted to investigate the effect of the various addition and exclusion time of 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) on embryonic developmental capacity of 2 cell embryos in mice. A total of 1,352 two cell embryo was cultured in MEM supplemented 20% hFF with or without glucose. 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. 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. 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.