P-13 Assessment of Culture Media with Adequate Energy Sources for Improving the Embryonic Development in In Vitro Co-culture System; Trial in a Mouse

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Background & Objectives: The purpose of this study was to assess the culture media with adequate energy sources for in vitro co-culture with vero cells using a various DMEM media with different composition of glucose and pyruvate.

Method: Two-cell embryos were collected from 4~5 weeks old ICR mice. Total 722 embryos were cultured with or without vero cells monolayer in four media with different compositions that was manufactured by two DMEM media with (DMEM-GGP) or without (DMEM-G) glucose and pyruvate. In group I, DMEM-G medium which is currently using for human embryo culture in our infertility clinic was used. Group II (DMEM-G¼GP) was cultured in medium which was mixed three volume of DMEM-G and one volume of DMEM-GGP, and group III (DMEM-G½GP) was cultured in medium which was mixed same volume of DMEM-G and DMEM-GGP, and group IV was cultured in DMEM-GGP. All media were added to 20% hFF. Results between different groups were analyzed using a Chi-square test, and considered statistically significant when p value was less than 0.05.

Results: The developmental rate into 3-cell ≤ after 24 hrs in in vitro culture by each different DMEM media without vero cell, group II (90.2%) was higher than other groups. And also, the rate of embryonic development after 48 (morula ≤), 72 (blastocyst ≤) and 96 hrs (hatched blastocyst ≤) in culture, group II (85.9, 89.1 and 69.6%, respectively) was significantly ($p<0.05$) higher than other groups. In the rate of development on in vitro co-culture by each different DMEM media with vero cell, group III (97.8, 96.7 and 65.6 %, respectively) was significantly ($p<0.05$) higher after 24, 48 and 96 hrs in culture than other groups. As for the rate of embryonic development into blastocyst ≤ after 72 hrs in culture, group II (61.1%) and III (64.4%) were significantly higher than group I (45.4%) and IV (20.4%).

Conclusions: In culture system using only each different DMEM media without vero cell, group II was more effective for the embryonic development than other groups. However, in co-culture system by each different DMEM media with vero cell, group III was more effective than other groups. These results are likely that was caused by consumption on glucose and pyruvate of vero cells in culture media. Therefore, the composition of energy sources in culture media may be very important point in co-culture system.