COMPARISON OF A SINGLE MEDIUM WITH SEQUENTIAL MEDIA FOR CULTURE OF SIBLING HUMAN EMBRYOS TO THE BLASTOCYST STAGE

S. Sepulveda[1], J. Garcia[1], E. Arriaga[1], L. Noriega[1], K.E. Wiemer[2] and D. Rieger[3]

[1]Instituto de Ginecologia y Reproduccion, Lima, Peru; [2]Northwest Center for Reproductive Sciences, Kirkland, USA; [3]LifeGlobal LLC, Guelph, Canada

Introduction: Gardner & Lane (*Principles of Cloning*, 187-213, 2002) have suggested that sequential culture media are required to meet the changing requirements of the developing embryo. Conversely, Biggers & Racowsky (*Reprod Biomed Online* **5**, 133-40, 2002) showed that a single medium could support the development of the human embryo to the blastocyst stage. The purpose of this study was to use sibling human zygotes to directly compare a single medium with sequential media for development to the blastocyst stage.
Methods: Oocytes were retrieved from 74 women 20-38 years of age (27.4 ± 5.7, mean ± S.D.) undergoing their first or second cycle of IVF or ICSI. The morning after fertilization (Day 1), the zygotes from each patient were randomly divided and cultured individually in 15 µl droplets of Global medium (IVFonline) or Early Cleavage Medium (ECM, Irvine Scientific). On Day 3, the embryos in Global medium were transferred to fresh droplets of Global medium, while those in ECM were transferred to droplets of Multiblast Medium (Irvine Scientific). All media were supplemented with 10% SSS (Irvine Scientific). On Day 5, the best one or two embryos from both culture treatments were selected for transfer.
Results: The results of evaluation of the embryos on Days 3 and 5 are shown in the table below. Proportions were compared by Chi-square analyses. All other measures were compared by Mann-Whitney U-tests
Conclusions: There were no significant differences between the culture treatments for cell numbers or fragmentation on Day 3, but compaction was significantly greater in Global medium. The ICM and trophectoderm scores on Day 5 were not different between media treatments. Development to blastocyst tended to be greater, and the proportions of expanded blastocysts and of embryos selected for transfer were greater in Global medium than in Irvine media. The results indicate that a single medium (Global) is at least as good as sequential media (Irvine ECM and Multiblast) for culture of human embryos to the blastocyst stage.

Measure	Global	Irvine	P
% of embryos with ≥ 8-cells on Day 3	37.9	33.1	0.237
% fragmentation on Day 3 (median)	5.0	5.0	0.132
% of embryos that were compacted by Day 3	10.1	4.4	0.009
% of embryos that had developed to the blastocyst stage by Day 5	42.7	34.4	0.069
ICM score of Day 5 blastocysts (mean ± S.D.)	1.9 ± 0.8	2.1 ± 0.9	0.266
Trophectoderm score of Day 5 blastocysts (mean ± S.D.)	2.0 ± 0.7	2.2 ± 0.8	0.206
% of blastocysts that had expanded by Day 5	21.6	8.6	0.013
% of Day 5 embryos selected for transfer	35.0	21.7	0.007

Sepulveda S, Garcia J, Arriaga E, Noriega L, Wiemer KE, Rieger D (2006) Comparison of a single medium with sequential media for culture of sibling human embryos to the blastocyst stage. *Proc. Mediterr. Soc. Reprod. Med.5th Ann. Meeting*, 56 (Abstr. OP-20).