

Focus on ART

Effects of embryo culture on global pattern of gene expression in preimplantation mouse embryos

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Abstract

Culture of preimplantation embryos affects gene expression. The magnitude of the effect on the global pattern of gene expression, however, is not known. We compared global patterns of gene expression in blastocysts cultured from the one-cell stage in either Whitten's medium or KSOM + amino acids (KSOM/AA) with that of blastocysts that developed *in vivo*, using the Affymetrix MOE430A chip. The analysis revealed that expression of 114 genes was affected after culture in Whitten's medium, whereas only 29 genes were mis-expressed after culture in KSOM/AA. Expression Analysis Systematic Explorer was used to identify biological and molecular processes that are perturbed after culture and indicated that genes involved in protein synthesis, cell proliferation and transporter function were down-regulated after culture in Whitten's medium. A common set of genes involved in transporter function was also down-regulated after culture in KSOM/AA. These results provide insights as to why embryos develop better in KSOM/AA than in Whitten's medium, and highlight the power of microarray analysis to assess global patterns of gene expression.

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