

## **Effect of Embryo Culture on Expression Pattern of Amino Acids Transporter Genes in Preimplantation Mouse Embryos**

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Amino acids are essential and beneficial components of *in vitro* culture media for preimplantation mouse embryos and human assisted reproductive technology (ART). It has been reported that *in vitro* culture of preimplantation embryos affects gene expressions. This study was performed to evaluate the expressions of amino acids transporter (AAT) genes in preimplantation mouse embryos. We also compared expression patterns of AAT genes from ovulated oocytes to blastocysts between *in vitro* cultured preimplantation mouse embryos by G1/G2 media and those of developed *in vivo*. The gene expressions were analyzed by real time RT-PCR for nine kinds of AAT genes.

Six kinds (mMCT1, mATB, mLAT1, mLAT2, my+LAT2 and m4F2hc) of AAT genes stably expressed from ovulated oocytes to blastocysts in both culture systems. Expressions of several AAT genes in *in vivo* embryos were significantly higher than those of *in vitro* embryos ( $P < 0.05$ ). Expression of mCAT1 and mCAT2 that were detected in ovulated oocytes and 2-cell stage embryos disappeared from 4-cell to compacting stage embryos, but it activated in morula stage again. mLAT2 expression was detected from compacting embryos.

We found alterations of AAT genes expressions by *in vitro* culture. It may be related to the insufficient *in vitro* culture condition. These results suggest that *in vitro* culture media and system for human ART should be more optimized for proper gene expression and development of preimplantation embryos.