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MiR-191-5p is upregulated in culture media of implanted human embryo on day 5th of development

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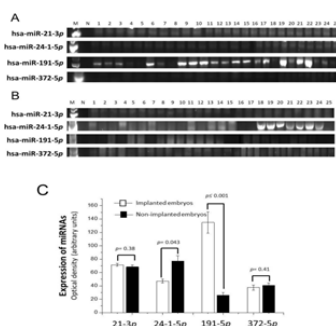
Background: Morphological features are the most common criteria used to select human embryos for transfer to a receptive uterine cavity. However, such characteristics are not valid for embryos in cellular arrest. Even aneuploid embryos can have normal morphology, and some euploid embryos have aberrant morphology. The aim of this study was to quantify the expression profile of hsa-miR-21-3p, -24-1-5p, -191-5p, and -372-5p in culture media on day 5 of in vitro embryo development, and compare the profiles of two groups of media classified by outcome: successful (n = 25) or unsuccessful (n = 25) implantation pregnancy.

Methods: Fifty patients were accepted in the Department of Reproductive Biology of a Hospital in México City, based on the Institutional inclusion criteria for in vitro fertilization. Embryos were transferred to the women on day 5 of cultivation, and the culture media were collected. RNA was isolated from each culture medium with TRIzol reagent, and microRNA (miRNA) expression was detected through RT-PCR with specific primers. Expression bands were quantified by reading optical density.

Results: There was a 5.2-fold greater expression of hsa-miR-191-5p in the pregnancy-related culture media ($p \leq 0.001$) and a 1.6-fold greater level of hsa-miR-24-1-5p ($p = 0.043$) in the media corresponding to non-pregnant women. No significant difference existed between the two groups hsa-miR-21-3p ($p = 0.38$) or hsa-miR-372-5p ($p = 0.41$).

Conclusions: Regarding adequate in vitro embryo development, hsa-miR-191-5p could possibly represent a positive biomarker, while has-miR-24-1-5p may indicate poor prognosis. This former miRNA modulates IGF2BP-1 and IGF2R, associated with the implantation window. On the other hand, hsa-miR-24-1-5p may be related to a poor prognosis of human embryo development.

Keywords: MiRNA expression, Embryo development, Implantation, Embryo culture media, In vitro fertilization.



Biography

Acuna has expertise in evaluation and treatment of infertile couples, particularly those participating in In Vitro Fertilization programs in Mexico. His focus of research has been recurrent implantation failure and embryo quality assessment. His aim is to develop analytic embryo assessment models in order to offer a more accurate prognosis on IVF results to patients based on non-invasive techniques, for example quantification of metabolites in embryo culture media.

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