Morphometric Evaluation of Mouse Embryos In Vitro Cultivated

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Keywords: morphometric measurements, mouse, embryo, in vitro

SUMMARY

Variation of the zona pellucida thickness and the embryo diameter are associated with the pregnancy rates and the degree of polispermy. The morphometric parameters gained a major importance for embryo quality evaluation in all in vitro procedures, since the software accessibility made this operation easy to apply.

The aim of this paper was a comparative study of several parameters of the in vivo obtained embryos recovered in the morula and blastocyst stage versus in vivo obtained embryos in 2, 4 and 8 cells stage in vitro cultivated up to the morula and blastocyst stage.

The parameters taken in consideration in our experiments were: the zona pelucida thickness, inner diameter, outer diameter, inner and outer perimeter of the embryo. The measurements were made with Quick Photo Micro 2.2 software. The experimental variants were: in vivo embryos obtained after 72 hours from the vaginal plug, in vivo embryos obtained after 48 hours of in vitro cultivation in specific media, in vivo embryos in vitro cultivated for 48 hours after vital staining.

From the obtained data’s was observed that the parameters taken under study varied. At the in vitro cultivated embryos has been observed a tendency of increasing the zona pelucida thickness from 9.8±1.7 μm at the morula stage embryos recovered at 72 hours from the vaginal plug to 11.1±1 μm for the embryos, stained prior in vitro cultivation. A similar variation was observed for the others parameters taken under study: inner diameter (from 98.4±3.3 μm to 111.6±3.2 μm), outer diameter (from 116.7±2.5 μm to 129.4±4.8 μm), inner perimeter (from 302±0.5 μm to 338±0.4 μm) and outer perimeter (from 325±0.8 μm to 391±0.4 μm). A similar difference was observed for the blastocyst stage embryos (from 6.2±0.5 μm for the embryos recovered at 72 hours from the vaginal plug to 8.7±1 μm for the embryos stained before in vitro cultivation). The embryos assessed by staining prior in vitro cultivation had higher values comparing to in vitro cultivated embryos without staining, the differences had no statistical significance.

In vitro cultivation of mouse embryos on synthetic media induces a smooth increase of the zona pellucida thickness. Values obtained varied from 9.8±1.7 μm for the embryos in morula stage recovered at 72 hours from the vaginal plug up to 11.1±1 μm for in vitro cultivated embryos vital stained prior cultivation. Differences were not statistical significant (p>0.05).

Acknowledgment: This work was supported by PN II-IDEI project, contract number 1088/2008.