

Antioxidants-enriched culture medium and its impact on blastocyst euploidy: insights from a prospective sibling oocyte study

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Objective

To evaluate the impact of a commercially available antioxidants-enriched culture medium on blastocyst euploidy rates , in comparison to a standard single-step culture medium

Material and Method

- Interim analysis of 93 PGT-A cycles (March–December 2024)
- 1,091 MII oocytes from 18–43-year-old female patients who had ≥ 6 MII oocytes
- MI oocytes randomized after denudation into two distinct culture media:
 - Gx antioxidants-containing medium, (Vitrolife) (n=546)
 - GT (Global-Total LP, CooperSurgical) (n= 545)
- ICSI was performed 1-hour post-denudation, and injected oocytes were placed into their respective medium, Gx or GT, for culture
- Blastocysts graded $\geq$ BL3CC on Days (D)5-7 underwent trophectoderm TE-biopsy for NGS analysis
- Post-insemination outcomes and blastocyst ploidy were assessed by mixed-effects-logistic-regression

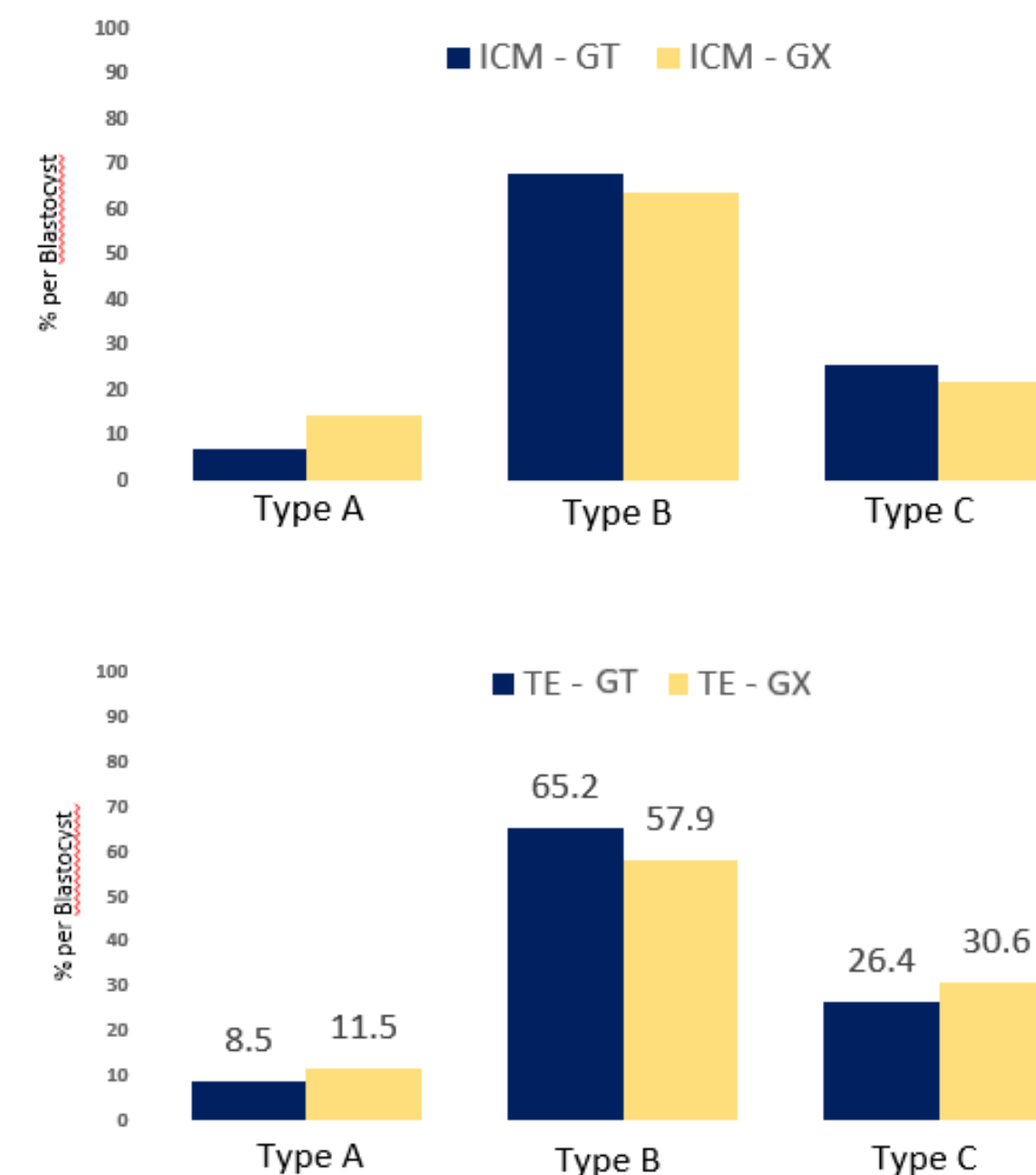
Results

The 2PN rate was 75.6% (GX) vs. 82.0% (GT), $p=0.044$. No significant differences were observed in number of cells and embryo fragmentation patterns on Day 3, neither on blastocyst rates D5-7. Usable blastocysts per 2PN tended to be higher in the GX group (50.6% vs. 44.9%, $p=0.099$), but not per MII oocyte (38.3% vs. 36.8%, $p=0.645$). PGT-A outcomes, aneuploidy, high and low mosaicism were similar between groups as well as euploidy rates/MI (20.9% vs 19.6%) and per biopsy (54.5% vs. 53.2%) in GX vs. GT medium (NS)

Table 1. Mixed-effects Regression Analysis for Post-insemination Outcomes in GX Culture Medium

Predictors	OR	CI	P
Normal fertilization (2PN) per MII	0.68	0.50 – 0.91	0.011
Abnormal fertilization per MII	0.98	0.57 – 1.67	0.934
Degeneration after ICSI per MII	1.58	0.97 – 2.57	0.068
D3 embryos per MII	0.70	0.70 – 0.70	<0.001
D5 blastocyst per 2PN	0.93	0.62 – 1.39	0.731
Biopsied blastocyst per 2PN	1.31	0.99 – 1.74	0.059
Euploid blastocyst per 2PN	1.23	0.90 – 1.68	0.201
Euploid blastocyst per biopsy	1.03	0.69 – 1.53	0.900
Mosaic blastocyst per 2PN	1.81	0.43 – 7.62	0.419
Mosaic blastocyst per biopsy	1.61	0.38 – 6.82	0.519

Figure 1. Comparison of ICM (up) and TE (down) quality of blastocysts formed in both GX and GT Culture Media (NS)



Conclusion

Euploidy rates in blastocysts derived from Gx culture are comparable to those obtained with a standard single-step culture medium