

Название: Tolerance of human embryonic stem cell derived islet progenitor cells to vitrification-relevant solutions

Авторы: Lahmy R.,
Bolyukh V.F.,
Castilla S.M.,
Laurent L.C.,
Katkov I.I.,
Itkin-Ansari P.

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Краткий обзор (реферат): We have previously shown that human embryonic stem cell derived islet progenitors (hESC-IPs), encapsulated inside an immunoprotective device, mature *in vivo* and ameliorate diabetes in mice. The ability to cryopreserve hESC-IPs preloaded in these devices would enhance consistency and portability, but traditional ‘slow freezing’ methods did not work well for cells encapsulated in the device. Vitrification is an attractive alternative cryopreservation approach. To assess the tolerance of hESC-IPs to vitrification relevant conditions, we here are reporting cell survival following excursions in tonicity, exposure to fifteen 40% v/v combinations of 4 cryoprotectants, and varied methods for addition and elution. We find that 78% survival is achieved using a protocol in which cells are abruptly (in one step) exposed to a solution containing 10% v/v each dimethyl sulfoxide, propylene glycol, ethylene glycol, and glycerol on ice, and eluted step-wise with DPBS + 0.5 M sucrose at 37 °C. Importantly, the hESC-IPs also maintain expression of the critical islet progenitor markers PDX-1, NKX6.1, NGN3 and NEURO-D1. Thus, hESC-IPs exhibit robust tolerance to exposure to vitrification solutions in relevant conditions.

Ссылка на статью

<http://www.sciencedirect.com/science/article/pii/S0011224015000565>