

Generation of artificial pancreas by using MIN-6 cell line culture seeded in decellularized testis's rat scaffold



Samaneh Karimi, Jafar Ai, Layasadat Khorsandi , Azin samimi and Afrooz karimi

¹ Abadan faculty of Medical Sciences, Iran

² Tehran University of Medical Sciences, Tehran, Iran

³ Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

⁴ Department of Pharmacology and Toxicology, school of Pharmacy, Ahvaz, Iran

⁵ Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Objective: Type 1 diabetes is an autoimmune disease which is due to the lack of β cells. Regenerative medicine offers the opportunity for curing diabetes. Native extracellular matrix (ECM) creates a reconstruction platform to replace the organs. A decellularized rats testis was used as a natural 3D scaffold in this experiment. MIN_6 cells were planted in the scaffold.

Methods: The decellularized testes were prepared for in vitro analyses.

Results: The decellularized testes were analyzed by histological studies such as H&E and DAPI staining. SEM showed that the 3D ultra structure of the testis remained intact. *In vitro* studies point out that the decellularized scaffold was non-toxic and performed a good platform for MIN_6 cells. The DTZ staining showed β cells in recellularized testis. Expression of genes (PDX1, Glut2, insulin) with RT-PCR and (PDX1, NSE, nestin) with western blotting in recellularized testis were upregulated compare with MIN_6 cells in media culture. Insulin release from recellularized showed increasing ($P < 0.05$) when exposed a high glucose media.

Conclusion: The decellularized testis can be considered as an artificial pancreas and may help to cure type 1 diabetic patients.

Biography

Samaneh karimi has completed her PhD at the age of 32 years from Ahvaz Jundi Shpour University of medical science, Iran. she is the professor of Abadan faculty of medical science, Iran.



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