ISSN: 2161-0681
Volume-12
Journal of Clinical & Experimental Pathology

https://www.omicsonline.org/clinical-experimental-pathology.php

Title: Three-dimensional scaffold with associated hemoxcell for supporting ipcs in diabetic nude mice subcutaneous tissue as promising preclinical trial

Sherry Khater

Urology and Nephrology Center, Egypt

Received: August 16, 2022; Accepted: August 18, 2022; Published: September 25, 2022

The worldwide prevalence of Diabetes mellitus evoked the need for better treatment options. Tissue engineering showed a great promising modality. For this, we investigated the potential role of a three-dimensional, scalable scaffold to support IPCs survival and function in the streptozotocin- induced, diabetic nude mice subcutaneous tissue, and to address the limits of our previously tested encapsulation systems. Isolation and expansion of human mesenchymal stem cells were subsequently differentiated into IPCs according to our published trichostatin-A protocol. Forty mice, diabetes was induced in 30, and 10 served as normal controls. For each diabetic mouse, 3x106 IPCs were cultured with the cytoform-400 scaffold in xenofree media with the addition of HEMOXCell just before transplantation. HEMOXCell subcutaneous injections for 7 days were done to further improve niche conditions. Follow-up for 3 months was done. The glucose tolerance curves exhibited a normal pattern demonstrating that the cells were glucose-sensitive and insulin- responsive. Their fasting blood sugar levels were reduced in 5 of them and reached near normal values in 15 of them. The sera of all transplanted mice contained human insulin and C-peptide with a negligible amount of mouse insulin. Removal of the transplanted scaffolds was followed by a prompt return of diabetes. Intracytoplasmic insulin granules were seen by immunofluorescence in cells from the harvested scaffolds. Furthermore, all pancreatic endocrine genes were expressed. This study demonstrated that the scalable scaffold with modified niche conditions can provide adequate support, an important issue when stem cells are considered for the treatment of type 1 diabetes mellitus.

Biography

I have completed my post- graduation at the age of 24 years from Mansoura University and MD degree from Benha University, Egypt. I have published 33 papers in reputed journals.