OPINION ARTICLE

Diabetes Management

Cell therapy for diabetes: Solution for managing blood glucose levels

Jarir Thobari*

Received: 03-Feb-2023, Manuscript No. FMDM-23-93482; **Editor assigned:** 06-Feb-2023, PreQC No. FMDM-23-93482 (PQ); **Reviewed:** 20-Feb-2023, QC No. FMDM-23-93482; **Revised:** 02-Mar-2023, Manuscript No. FMDM-23-93482 (R);**Published:** 09-Mar-2023, DOI: 10.37532/1758-1907.2023.13.453-454

Description

Diabetes is a chronic metabolic disorder that affects millions of people worldwide. It is characterized by elevated blood glucose levels, resulting from the body's inability to produce or effectively use insulin, a hormone that regulates glucose uptake by cells. Current treatments for diabetes include lifestyle modifications, oral medications, insulin therapy, and pancreatic transplantation. However, these approaches have limitations in terms of effectiveness, safety, and accessibility. Thus, there is a need for new therapeutic strategies that can provide better outcomes for diabetic patients. One such approach is cell therapy, which involves the use of living cells to replace or repair damaged tissues and organs. In this essay, we will discuss the potential of cell therapy for diabetes and the challenges that need to be overcome to make it a viable treatment option.

Cell therapy for diabetes involves the transplantation of pancreatic islet cells, which are clusters of cells that contain beta cells responsible for producing insulin. The goal of the therapy is to restore normal insulin secretion and glucose regulation in the body. There are several sources of islet cells that can be used for transplantation, including cadaveric donors, living donors, and stem cells. Cadaveric donor islet cells are obtained from deceased donors and are currently the most common source of islet cells used for transplantation. However, the limited availability of donor organs and the risk of rejection by the recipient's immune system are major challenges associated with this approach. Living donor islet cells, obtained from a healthy donor, offer a potential solution to the shortage of donor organs but are associated with risks to the donor and the recipient. Stem cell-derived islet cells, on the other hand, offer an unlimited source of islet cells and the potential to overcome the immune rejection problem, but their safety and efficacy need to be further validated in clinical trials.

Several clinical trials have shown promising results for cell therapy in diabetes. That islet cell transplantation improved glycemic control and reduced the need for insulin therapy in patients with type 1 diabetes. The trial involved 36 patients who received islet cells from deceased donors and were followed up for up to 3 years. The researchers found that 88% of patients achieved insulin independence at some point during the study period, and the majority of patients had sustained improvement in glycemic control. Another study showed similar results in patients with type 2 diabetes who received islet cell transplantation. The study involved 20 patients who received islet cells from living donors and were followed up for up to 2 years. The researchers found that the patients had improved glycemic control and reduced insulin requirements after transplantation.

Department of Medicine, Monash University, Clayton, Australia
**Author for correspondence: thobari@astin.org.au*

While these results are promising, there are several challenges that need to be addressed to make cell therapy a viable treatment option for diabetes. One of the major challenges is the shortage of donor organs. Currently, the demand for islet cells exceeds the supply, and many patients are unable to receive transplantation due to the limited availability of donor organs. Thus, alternative sources of islet cells need to be developed, such as stem cell-derived islet cells or xenogeneic islet cells obtained from animal donors. However, these sources have their own challenges, such as the risk of teratoma formation in stem cell-derived islet cells and the risk of transmission of infectious diseases from animal donors.

Another challenge is the immune rejection of transplanted islet cells. The immune system recognizes transplanted cells as foreign and mounts an immune response that can lead to rejection and loss of function of the transplanted cells. To overcome this challenge, immunosuppressive drugs are used to suppress the immune system.