

**DIABETES MELLITUS TYPE 1 AND
STEM CELL THERAPY**

**DR. THIRIBURA SUNDRA SUMATHI
A/P SUPPIAH
1001129921**

**MASTER OF SCIENCE (ANTI-AGING,
REGENERATIVE MEDICINE AND MEDICAL
AESTHETIC)
IN THE FACULTY OF MEDICINE AND HEALTH
SCIENCES, UCSI UNIVERSITY**

2013

ABSTRACT

Diabetes mellitus type 1 (T1DM) is one of the most common autoimmune diseases, resulting from the destruction of insulin-producing β -cells in the pancreatic islets of Langerhans. Currently there is no cure for diabetes mellitus. Stem cell based therapy have generated new interest in the treatment of T1DM, however the efficacy and safety still remains a question. Our objective is to perform a structured review of all trials to assess the effectiveness of stem cell therapies for T1DM and to find out the type of stem cell which is effective and the side effects of stem cell therapies for T1DM. A systematic search was done for all English articles in Medline (PubMed) and Cochrane central register of controlled trials from year 1990 to 2013. Medical subject headings (Mesh) and keywords which were used are diabetes mellitus type1, DM1, insulin dependent diabetes mellitus, IDDM (insulin dependent diabetes mellitus), autoimmune diabetes, stem cell transplantation and stem cell therapy. Seven clinical trials representing 132 participants were included in this review. Heterogeneity was observed among the trials chosen for the review. Hence subgroup descriptive analysis was done. Conclusion made that AHSCT (autologous haematopoietic stem cell transplantation) was able to induce insulin independence with reduction of HbA1C and elevation of C-peptide level in a group of patients with T1DM with no history of DKA (diabetic ketoacidosis). Similar beneficial effect was also seen in Stem Cell Educator therapy but not in foetal liver derived HSC (haematopoietic stem cell). However long term complications of stem cell therapy were significant which may outweigh the beneficial effect of AHSCT.