Title: Current status of stem cell therapy, scaffolds for the treatment of diabetes mellitus

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Current status of stem cell therapy, scaffolds for the treatment of diabetes mellitus

short running title: stem cell for diabetes

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Abstract:
Diabetes mellitus (DM) remains the 7th leading cause of death in the world. Daily insulin injection is one component of a treatment plan for people with Diabetes mellitus type 1 (T1DM) that restores normal or near-normal blood sugar levels. However, Insulin treatment depends upon a variety of individual factors and leads to poor and drastic glycemic control. The need for an effective cell replacement strategy will be the aim of future clinical trials. Therefore, the aim of this systematic review is to outline the latest advances in scaffolding and stem cell therapy as a non-pharmacologic treatment for T1DM. It also emphasizes on some pancreas differentiation protocols and the clinical trials associated with stem cell therapy regarding T1DM in vitro and in vivo.
Keywords: Diabetes mellitus, cell therapy, stem cell, scaffold

Introduction
Diabetes affected 9.3% of the American population in 2012, according to the recent National Diabetes Factsheet published by the American Diabetes Association, and remains the 7th leading cause of death in 2010.The most prevalent diabetes complications/co-Morbid conditions are Hypoglycemia, Hypertension, Dyslipidemia, Cardiovascular disease Death Rates, Heart Attack, Rates Stroke, Blindness and Eye Problems, Kidney Disease, Amputations.
Diabetes mellitus type 1 (also known as type 1 diabetes, or T1DM; formerly insulin-dependent diabetes or juvenile diabetes comprises 5~10% of the total diabetic population. The progressive autoimmune destruction of pancreatic β-cells during T1DM resulting in the loss of insulin production and secretion. T1DM as chronic, multifactorial autoimmune disease characterized by polydipsia, polyphagia, and polyuria which result from hyperglycemia-induced osmotic dieresis.(1)
Current treatment