J Diabetes Metab 2018, Volume 9
DOI: 10.4172/2155-6156-C4-088

27th European Diabetes Congress

June 20-21, 2018 | Rome, Italy

Are stem cells the future for diet-induced obesity and diabetes: Preclinical evidence-based approach

Fatima Saleh[a]
[a]Beirut Arab University, Lebanon

Statement of the Problem: Obesity has become a major healthcare issue over the past two decades, and this has led to a dramatic increase in the incidence of type 2 Diabetes. The current status pressed the need for a novel treatment for obesity and its associated comorbidities (i.e. type 2 diabetes). Stem cell-based therapy is emerging as a promising therapy for diet-induced obesity. The purpose of this study is to highlight the efficacy and safety of adipose derived stem cells (AD-MSCs) on obesity and related comorbidities in animal models, in order to establish the feasibility of translation into the clinical setting for a possible treatment in humans. Methodology and Theoretical Orientation: a systematic review was conducted in adherence to the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines, and the protocol was registered in the PROSPERO registry (CRD42017077347). Findings: The initial search retrieved 578 papers, and seven articles met the inclusion criteria. Strong evidence reported the positive effect of AD-MSCs on obesity treatment in terms of body weight, glucose metabolism homeostasis, lipid profiles, non-alcoholic fatty liver disease and systemic inflammation. Specifically the improvements in glucose metabolism as manifested by lower blood glucose level via increasing circulating insulin, and c-peptide levels, improving glucose tolerance, up-regulating skeletal muscle GLUT-4 gene expression levels and promoting pancreatic islet growth. Recommendations: This study demonstrates the promising beneficial effects of AD-MSCs on obesity and obesity-related diseases such as type 2 Diabetes and dyslipidemia in animal models. However, more studies should be performed to understand their mechanism of action and to overcome some methodological limitations evidenced in our systematic review before moving forward to consider AD-MSCs transplantation into human.