

Treating Diet-Induced Obesity with Adipose-Derived Mesenchymal Stem Cells: Preclinical Evidence-Based Approach

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Introduction: Obesity has become a major healthcare issue over the past two decades, but its treatment is not yet optimal, especially in the long-term. The current status pressed the need for a novel treatment for obesity and its associated comorbidities. 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: 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.

Conclusion: 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.

Biography:

Dr. Fatima Saleh is an Assistant Professor in the Faculty of Health Sciences at Beirut Arab University (BAU) since 2013. She obtained her BSc in Pharmacy in 2004 from BAU and MSc in Pharmacology and Biotechnology from UK. Dr. Saleh received her PhD degree in Biomedical Sciences from University of York, UK. Her current research interests focus on Mesenchymal stem cell research as well as identification of natural compounds with anti-diabetic, anti-oxidant or antimicrobial activity. She published in peer-reviewed journals and presented her work in many international conferences.