

Somatic stem cells as a potential therapy for obesity and its associated comorbidities

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Abstract

Statement of the Problem: Obesity is a global public health concern associated with increased risk of several comorbidities such as diabetes, cardiovascular diseases (CVD), nonalcoholic fatty liver diseases (NAFLD) and kidney diseases. Despite all efforts made, no therapy has succeeded in reversing the obesity pandemic and its associated diseases. Our aim was to examine the effect of adipose-derived mesenchymal stem cells (AD-MSCs) on obesity and its associated comorbidities in a diet-induced obese (DIO) animal model. **Methodology and theoretical orientation:** C57BL6 mice were fed with either high fat diet (HFD) or CHOW diet for 15 weeks. Obese and lean mice were then subjected to two doses of AD-MSCs intraperitoneally. Mice body weight and composition; food intake; blood glucose levels; glycated hemoglobin (HbA1c), intraperitoneal glucose tolerance test and atherogenic index of plasma (AIP) were measured. Animals were then sacrificed and adipose, hepatic, renal, and cardiac tissues were obtained for histopathological evaluation. Pro-inflammatory cytokines, tumor necrosis factor- α and interleukin-6, were also determined. **Findings:** MSCs treatment reduced blood glucose levels, HbA1c and AIP as well as improved glucose tolerance in DIO mice. Moreover, it significantly reversed the significant histopathological abnormalities induced by obesity. In addition, MSCs caused significant attenuation in the levels of inflammatory mediators in HFD-fed mice. **Conclusion & Significance:** In conclusion, this study demonstrated the therapeutic effects of somatic stem cells on obesity-associated complications such as diabetes, NAFLD, CVD, and kidney disorders in a diet-induced obese animal model. Thus, somatic stem cells may offer a promising therapeutic potential in counteracting obesity-related diseases in patients.

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Biography

Fatima Saleh is an Associate Professor & Head of Medical Laboratory Department at Faculty of Health Sciences, Beirut Arab University, Lebanon. Dr. Saleh obtained her BSc in Pharmacy, then her MSc in Pharmacology & Biotechnology from Sheffield Hallam University, UK & PhD in Biological

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