Biomedical Research & Therapy

ISSN: 2198-4093
www.bmrat.org

Check for updates

POSTER

Adipose-derived stem cells alleviate glucose tolerance in type 2 diabetic mouse

Anh Bui Nguyen-Tu, Cong Le-Thanh Nguyen, Anh Thi-Minh Nguyen, Nhat Chau Truong, Ngoc Kim Phan, Loan Thi-Tung Dang

Laboratory of Stem Cell Research and Application, University of Science, Vietnam National University, Ho Chi Minh City

Abstract

Background: Type 2 diabetes (T2D) is the most common form of diabetes and accounts for 90-95% of all existing diabetic cases. The main etiologies of T2D include insulin resistance in target tissues, insufficient secretion of insulin and subsequent decline of pancreatic β-cell function. Recently, many studies have suggested that adipose – derived stem cells (ASCs) were potential to alleviate insulin resistance and hyperglycemia and promote the islets repair. In this study, ASCs were hypothesized that they could have ameliorative effects on type 2 diabetic mice.

Methods: Type 2 diabetic mice were induced by a combination of high-fat diet and injection of STZ 100 mg/kg and NA 120 mg/kg. Thereafter, two doses of 106 human ASCs were transplanted 2 week interval into each mouse via the tail vein. The mice were monitored health condition, rate of mortaity, body weight, consumption of food and water, blood glucose level, serum insulin level and histological structure of pancreatic islets.

Results: Our results indicated that the ASC-treated mice expressed improved condition in comparision with non-treated diabetic mice. The consumption of food and water as well as the blood glucose level decreased. Simultaneously, ASC transplantation improved the impaired glucose tolerance and insulin tolerance in T2D mice. Besides, the total cholesterol have significantly decreased.

Conclusion: it is suggested that human ASCs infusion is safe and effective for type 2 diabetes mellitus in mice regarding the improved glucose metabolism and insulin resistance.

*For correspondence:

pvphuc@hcmus.edu.vn

Competing interests: The authors declare that no competing interests exist.

Received: 2017-08-06
Accepted: 2017-08-17
Published: 2017-09-05

Keywords

Type 2 diabetes, adipose – derived stem cells , Streptozotocin

Funding

References

DOI 10.15419/bmrat.v4iS.354