THE IMPACTS OF A GASTROILEOSTOMY RAT MODEL ON GLUCAGON-LIKE PEPTIDE-1: A PROMISING MODEL FOR CONTROL OF TYPE 2 DIABETES MELLITUS

Erfan Sheikhbahaei and Shahab Shahabi
Isfahan University of Medical Sciences, Iran

Background: One of the new current treatment options of Diabetes mellitus is increasing Glucagon-like peptide-1 (GLP-1) activity. GLP-1, a gastrointestinal peptide with incretin effect, has a significant role in glucose homeostasis. Gastroileostomy can provide intrinsic increases of secretion of GLP-1 in the setting of rapid delivery of carbohydrate and glucose to the terminal ileum. An animal model of a male New Zealand species of rats was developed to study the early effects of a gastroileostomy on serum levels of glucagon-like peptide-1 (GLP-1), glucose and insulin.

Methods: Gastroileostomies were performed on 15 male New Zealand rats. Blood samples were obtained at the baseline and one week after the gastroileostomy and analysed for serum glucose, insulin and GLP-1 level. P value of 0.05 was considered to be significant.

Results: The data show that gastroileostomy surgery elevates the level of GLP-1 in plasma (89.1852±77.26 vs. 177.440±40.93), and this change was statistically significant (p< 0.05). A significant decrease of weight (330±15 gm vs. 240±25 gm before and after respectively) was recorded in operated rats (P< 0.05).

Conclusion: Based on the results of this study, gastroileostomy could be an effective treatment to decrease the level of plasma glucose associated with increased GLP-1 in rats. This rat model could be a promising surgery for treatment of type 2 diabetes mellitus.

erfan.shikhbahaei@gmail.com