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

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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 base line 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 that 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

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