

البحث السابع:

Differential effects of liraglutide naltrexone/bupropion, and caloric restriction on metabolic parameters and beta-cell regeneration in type 2 diabetic rat model: role of beta arrestin 1

المشتركون في البحث:

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ملخص البحث:

Abstract

Introduction: Traditional antidiabetic treatments often carry the risk of beta-cell exhaustion, highlighting the need for therapies that promote beta-cell regeneration.

Aim: This study investigates the comparative effects of Liraglutide, naltrexone/bupropion (NTX + BUP), and caloric restriction on metabolic control and beta-cell regeneration in a rat model of obese type 2 diabetes. Fifty male albino rats were randomized into five groups: normal control, diabetic control, diabetic + caloric restriction (50%), diabetic + NTX + BUP (4 mg/45 mg /kg/day orally), and diabetic + liraglutide (0.3 mg/kg/day, S.C). Body weight, BMI, serum glucose, insulin, lipid profile, atherogenic indices, beta-arrestin-1 levels, pancreatic histopathology, and immunohistochemical staining for insulin and Ki67 were assessed.

Results: All interventions significantly improved body weight, BMI, glycemic control, lipid profiles (except HDL), and atherogenic indices compared to the diabetic control group. NTX + BUP and caloric restriction resulted in greater weight loss compared to liraglutide. Of note, liraglutide significantly decreased β -arrestin-1 levels compared to both NTX + BUP and caloric restriction. Furthermore, liraglutide and caloric restriction significantly increased anti-insulin antibodies and Ki67 indicating beta-cell regeneration, while NTX + BUP showed insignificant effects.

Conclusion: Thus we can conclude that, while NTX + BUP demonstrates efficacy in improving metabolic parameters in obese type 2 diabetic rats, it shows limitations in promoting beta-cell regeneration compared to liraglutide and caloric restriction.

Keywords Naltrexone/bupropion · Liraglutide · Caloric restriction · β -cell regeneration · Type 2 diabetes