



The Role of Incretin Mimetic in Diabetes Therapy

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INTRODUCTION

Incretin mimetic, a class of medications used in the treatment of type 2 diabetes mellitus (T2DM), have emerged as valuable therapeutic agents due to their unique mechanism of action and favourable effects on glycaemic control and weight management. This article explores the role of incretin mimetic in diabetes therapy, highlighting their mechanisms of action, clinical efficacy, and potential benefits for patients. Incretin hormones, such as glucagon-like peptide-1 (GLP-1) and glucose-dependent insulin tropic polypeptide (GIP), are released by the gut in response to food intake. They play a crucial role in regulating glucose homeostasis by stimulating insulin secretion, inhibiting glucagon release, delaying gastric emptying, and promoting satiety. Incretin mimetic are synthetic analogy of endogenous incretin hormones designed to mimic their effects on glucose metabolism. The two main classes of incretin mimetic are GLP-1 receptor agonists (GLP-1RAs) and dipeptidyl peptidase-4 (DPP-4) inhibitors. GLP-1RAs bind to and activate GLP-1 receptors on pancreatic beta cells, stimulating insulin secretion in a glucose-dependent manner.

DESCRIPTION

They also suppress glucagon secretion, slow gastric emptying, and promote satiety, leading to improved glycaemic control and weight loss. DPP-4 inhibitors block the enzymatic degradation of endogenous GLP-1 and GIP, thereby increasing their circulating levels. This results in enhanced insulin secretion and suppression of glucagon release, leading to improved glucose control. Incretin mimetic have been shown to significantly reduce haemoglobin A1c (HbA1c) levels, a marker of long-term glycaemic control, in patients with T2DM. Their glucose-lowering effects are comparable to or even superior to other antidiabetic medications, such as sulfonylureas and thiazolidinedione's. GLP-1RAs are associated with weight loss in patients with T2DM, making them particularly attractive for individuals who are overweight or obese. The weight loss effect is thought to be mediated by reduced appetite, decreased

food intake, and inhibition of gastric emptying. Some GLP-1RAs have demonstrated cardiovascular benefits beyond glycaemic control, including reductions in cardiovascular events, such as myocardial infarction, stroke, and cardiovascular death. These cardiovascular benefits are attributed to their favourable effects on blood pressure, lipid profiles, and endothelial function. Emerging evidence suggests that GLP-1RAs may exert protective effects on the kidneys, including reductions in albuminuria and preservation of renal function. These Reno protective effects are thought to be mediated by improvements in glomerular hemodynamic, reduction in inflammation, and attenuation of oxidative stress. Incretin mimetic are generally well-tolerated, with a low risk of hypoglycaemia when used as monotherapy or in combination with other antidiabetic medications. Common adverse effects include gastrointestinal symptoms, such as nausea, vomiting, and diarrhoea, which are usually transient and diminish over time. Incretin mimetic are recommended as second-line therapy for patients with T2DM who fail to achieve glycaemic targets with lifestyle modifications and metformin monotherapy. They are particularly suitable for individuals who are overweight or obese and those at risk of cardiovascular disease.

CONCLUSION

Regular monitoring of glycaemic parameters, body weight, blood pressure, renal function, and adverse effects is essential to assess treatment response and ensure safety. Incretin mimetic represent a valuable addition to the armamentarium of antidiabetic medications, offering unique benefits for patients with T2DM. Their favourable effects on glycaemic control, weight management, cardiovascular health, and renal protection make them an attractive option for personalized diabetes therapy. However, considerations regarding patient selection, administration, and monitoring are important in optimizing their use in clinical practice. As research continues to elucidate their long-term efficacy and safety profile, incretin mimetic are poised to play an increasingly prominent role in diabetes management.

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