



Insights into amylin: The hormone with a crucial role in blood sugar regulation

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Description

While insulin is widely recognized as the primary hormone involved in blood sugar regulation, another hormone called amylin plays a vital role in this process as well. Produced by the pancreas along with insulin, amylin helps control blood sugar levels by slowing down the rate at which glucose is released into the bloodstream after meals. This article discusses about the functions of amylin, its significance in diabetes management, and potential therapeutic implications for improving blood sugar control.

Amylin, also known as Islet Amyloid Polypeptide (IAPP), is a hormone produced by the beta cells of the pancreas, which are the same cells responsible for producing insulin. Amylin is released into the bloodstream in response to food intake, particularly after meals that contain carbohydrates. Its primary function is to regulate blood sugar levels by modulating the rate of glucose absorption from the digestive tract into the bloodstream.

■ Functions of amylin

Amylin exerts several physiological effects that contribute to blood sugar regulation and overall metabolic health are given below.

Slows gastric emptying: One of the key functions of amylin is to slow down the emptying of the stomach, delaying the absorption of glucose into the bloodstream. This helps prevent rapid spikes in blood sugar levels after meals.

Suppresses glucagon secretion: Amylin inhibits

the secretion of glucagon, another hormone produced by the pancreas that promotes the release of glucose from the liver into the bloodstream. By reducing glucagon levels, amylin helps prevent excessive glucose production and release during periods of fasting.

Increases satiety: Amylin acts on the brain to promote feelings of fullness and satiety, reducing appetite and food intake. This helps regulate caloric intake and may contribute to weight management.

Modulates insulin activity: Amylin works in concert with insulin to regulate blood sugar levels. It enhances the effects of insulin by slowing down the rate of glucose absorption from the digestive tract and promoting glucose uptake by cells for energy.

Significance in diabetes management: In individuals with diabetes, amylin production and function may be impaired, leading to dysregulation of blood sugar levels and increased risk of complications.

Type 1 diabetes: In type 1 diabetes, the autoimmune destruction of pancreatic beta cells results in reduced or absent production of both insulin and amylin. This contributes to erratic blood sugar fluctuations and may require exogenous insulin and amylin replacement therapy.

Type 2 diabetes: In type 2 diabetes, amylin production may be impaired due to beta cell dysfunction and insulin resistance. This can

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contribute to postprandial hyperglycemia and poor blood sugar control. Medications that mimic the actions of amylin, such as pramlintide, may be prescribed to improve blood sugar regulation.

■ Therapeutic implications

Given its role in blood sugar regulation, amylin-based therapies have been developed to improve diabetes management.

Pramlintide: Pramlintide is a synthetic analog of amylin that is approved for use in individuals with type 1 and type 2 diabetes who use mealtime insulin. It is administered *via* subcutaneous injection and helps reduce postprandial glucose excursions by slowing gastric emptying, suppressing glucagon secretion, and promoting satiety.

Amylin is a hormone produced by the pancreas that plays a crucial role in blood sugar regulation and metabolic homeostasis. Its functions include slowing gastric emptying, suppressing glucagon secretion, promoting satiety, and modulating insulin activity. In individuals with diabetes, impaired amylin production and function may contribute to poor blood sugar control and increased risk of complications. Therapeutic interventions that target amylin signaling pathways, such as pramlintide, offer promising options for improving diabetes management and optimizing overall metabolic health. Further research into the mechanisms underlying amylin action may uncover novel therapeutic targets for the treatment of diabetes and related metabolic disorders.