

INNATE INTELLIGENCE

PANCREAS – Hormonal (Endocrine) Functions

- **Normal Function** – Various cells in the pancreatic Islets of Langerhans produce the hormones insulin and glucagon that regulate blood sugar levels. Somatostatin can prevent the release of insulin and glucagon, and sodium bicarbonate.

- **Innate Stimulus** – Secretin is released by S cells in response to acid and Insulin is released in response to high blood glucose levels. Glucagon is released in response to low blood glucose levels.

- **Innate Response** – Insulin helps lower blood sugar by facilitating glucose uptake into cells. Glucagon raises blood sugar by stimulating glucose production and glycogen release from the liver. Somatostatin can be released in response to many adverse stimuli emanating including stress and inflammation.

| SYMPTOMS OF ENERGY DEFICIENCY | |
|--|--|
| STRESS RESPONSE | ORGAN EXHAUSTION |
| Increases nutrient requirements Increased Glucagon secretion Decreased Insulin secretion | Deficient nutrients available Inadequate digestive secretions |
| FREQUENT SYMPTOMS | |
| Symptoms of inadequate insulin secretion manifest as increased thirst, frequent urination, unexplained weight loss, fatigue, and blurred vision, which may suggest the onset of diabetes. | Symptoms of inadequate glucagon secretion are related to low blood sugar levels. They include shakiness, sweating, dizziness, rapid heartbeat, hunger, confusion, and nervousness. |
| NUTRITIONAL CONSIDERATIONS | |
| Improve Digestion and Absorption | |
| To potentially increase pancreatic hormone secretions, focus on consuming foods rich in fiber, healthy fats, and lean protein. Specific examples include whole grains, fruits, vegetables, lean meats, nuts, seeds, and unsaturated fats like olive oil. | |
| CLINICAL CONSIDERATIONS | |
| Involuntary muscle contractions | |
| Sympathetic Nerve Supply | C2 and C3 (SCG) from T1 to T3 |

During a stress response, glucagon secretion generally increases while insulin secretion tends to decrease. This is because stress hormones, like cortisol and epinephrine, stimulate glucagon and inhibit insulin, leading to an elevation of blood glucose levels. This hormonal shift prepares the body for the demands of stress by making more glucose available for energy.

During a stress response, glucagon secretion can be decreased, although it is also known to be released during stress to counter hypoglycemia. This apparent contradiction is due to the complex interplay of hormones and mechanisms involved in the stress response. While glucagon normally stimulates the liver to release glucose, stress hormones like cortisol and epinephrine can suppress glucagon secretion, especially when blood glucose levels are already elevated.

Supplementing nutrients to counter symptoms is little more than educated guesswork. Symptoms are Innate's signal that a system, organ, or tissue is unable to produce adequate energy to meet its responsibilities for maintaining homeostasis and normal physiological function. **Carbohydrates, protein, lipids, vitamins, and minerals are building blocks used in producing energy.** They must be put to work. They are not workers.

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