**INSULIN’S ROLE IN BODY AND BRAIN**

Insulin, long recognized as a primary regulator of blood glucose, is now also understood to play key roles in neuroplasticity, neuromodulation, and neurotrophism, the process of neuronal growth, stimulated by neuronal differentiation and survival.

**METABOLIC INFLUENCE**

Insulin is one of the primary hormones involved in blood glucose regulation. Its dysregulation is associated with obesity and diabetes.

**NEUROLOGIC INFLUENCE**

Insulin activates insulin receptors and downstream signaling molecules in the brain and spinal cord, as well as insulin-sensitive glucose transporters in the peripheral insulin-sensitive tissues (liver, muscle, fat). Through these mechanisms, insulin participates in feeding behavior, reward pathways, whole body metabolism, and normal emotional and cognitive brain functions. The dysregulation of insulin-mediated signaling pathways in the brain is implicated in neurodegenerative diseases such as Alzheimer’s and psychiatric disorders such as schizophrenia.

**Precise Graphics**

Cortext

Hypothalamus

Midbrain

**Glucagon stimulates the conversion of stored glycogen in the liver into glucose.**

**Glucagon released by alpha cells of pancreas.**

**High blood glucose**

**Insulin released by beta cells of pancreas.**

**Glucose**

**Glycogen**

**Tissue cells take up glucose from blood.**

**Low blood glucose**

**Insulin can cross the blood-brain barrier.**