

REGULATION OF INSULIN RELEASE:

The β cell has insulin receptors present in it, thus insulin can also regulate its own release through an autocrine regulatory mechanism. Glucose exerts a principle stimulus for insulin release from the pancreatic β cells respectively. Glucose is transported to the β -cell surface by a specific glucose transporter (GLUT-2) on the cell surface.

The glucokinase phosphorylates glucose and leads to generation of acetyl CoA and ATP by glycolysis and Krebs cycle. This leads to inhibition and closure of ATP-sensitive K^+ channels, reducing the efflux of K^+ . This results in membrane depolarization, opening of voltage dependent Ca^{2+} channel and increased Ca^{2+} influx. This increase of extracellular Ca^{2+} and mobilization of Ca^{2+} from intracellular store leads to the fusion of insulin-containing secretory granules with the plasma membrane and release of insulin into the circulation.

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