Glucose-dependent insulin secretion in pancreatic ?-cell islets from male rats requires Ca²⁺ release via ROS-stimulated ryanodine receptors

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 Glucose-stimulated insulin secretion (GSIS) from pancreatic ?-cells requires an increase in intracellular free Ca²⁺ concentration ([Ca²⁺]). Glucose uptake into ?-cells promotes Ca²⁺ influx and reactive oxygen species (ROS) generation. In other cell types, Ca²⁺ and ROS jointly induce Ca²⁺ release mediated by ryanodine receptor (RyR) channels. Therefore, we explored here if RyR-mediated Ca²⁺ release contributes to GSIS in ?-cell islets isolated from male rats. Stimulatory glucose increased islet insulin secretion, and promoted ROS generation in islets and dissociated ?-cells. Conventional PCR assays and