

P028 Subcellular localisation of ATP-sensitive K⁺ channel subunits (SUR1 and Kir6.2) in clonal MIN6 pancreatic β -cells using immuno-electron microscopy.

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K_{ATP} channels play a critical role in regulating plasma membrane potential and thus insulin secretion from pancreatic islet β -cells. However, a recent report has suggested that the K_{ATP} channel subunits may also be present on intracellular structures, including insulin-containing vesicles and possibly mitochondria. We aimed here to quantify the subcellular distribution of SUR and Kir6.2 in MIN6 β -cells. K_{ATP} channel subunits were localised to specific organelles using electron microscopy with SUR and Kir6.2 specific antibodies and detected by immunogold-conjugated secondary antibodies. In agreement with our previous subcellular fractionation studies ~20 % of Kir6.2 and ~25 % of SUR immunoreactivity was associated with insulin-containing vesicle membranes while no immunoreactivity was detected on mitochondria. Thus, a significant proportion of Kir6.2 and SUR1 is localised in dense core vesicles, and may correspond to the "granule-SUR" previously defined as an intracellular target for sulphonylureas. By contrast, the existence of functional K_{ATP} channels on mitochondria would appear to be unlikely in these cells.