A new possible method to detect the rate of insulin release from mouse pancreatic islet cells using Zinquin, a specific fluorescent probe for zinc

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In the present experiments, an attempt was made to detect the rate of insulin release from isolated islets using Zinquin, a specific probe for zinc, as zinc is co-stored and co-released with insulin by exocytosis. Changes in Zinquin fluorescence were examined with incubation solutions of isolated mouse islets with various stimuli for exocytosis. Various secretagogues which stimulate insulin release also increased Zinquin fluorescence, i. e. zinc concentration, indicating co-release of both substances.

A significant correlation was obtained between zinc measured with the Zinquin method and insulin concentration measured by RIA.

This report was the first demonstration that Zinquin fluorescence increased in association with insulin release with a significant correlation and may propose future possibility of utilization of this method for semi-quantitative detection of insulin release under experimental conditions.

Photodynamic modulation of exocytosis in rat peritoneal mast cells

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Photodynamic action which produces singlet oxygen by transferring photon energy from a phtosensitizer to ground state molecular oxygen can modify various cellular responses. It has been reported that membrane -localized phtosensitizers such as PLMGdB (gadolinium porphyrin-like macrocycle B) and SALPC (sulfonated aluminum phthalocy- and cardiomyocytes, $[Ca^{2+}]_i$ is increased by photodynamic action. A photosensitizer could induce contraction of smooth muscle cells or elicite amylase secretion in isolated rat pancreatic acinar cells while it inhibited amylase release from AR 4-2 J cells. These effects are assumed to be caused by singlet oxygen -induced permanent conformational changes