

**P029** Activation of AMP-activated protein Kinase (AMPK) promotes glucagon secretion from pancreatic alpha cells

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**Aim:** AMP-Activated Protein Kinase (AMPK) modulates glucose-regulated insulin secretion and preproinsulin gene transcription in pancreatic  $\beta$  cells. Glucagon, which counter-regulates the glucose-lowering effect by insulin, plays a further pivotal role in maintaining glucose homeostasis. Here, we investigated the possible involvement of AMPK in the control of glucagon secretion from pancreatic islet alpha cells.

**Methods:**  $\alpha$ TC1-9 cells were incubated for 60 min. at 0 or 17 mmol/l glucose in the additional presence or absence 1 mmol/l phenformin (a pharmacological AMPK activator) or 20  $\mu$ mol/l compound C (an AMPK inhibitor). Activation of AMPK was assessed by western (immuno-) blotting using an antiphospho-T172-AMPK $\alpha$  antibody or an antiphospho-Ser-79-acetyl-CoA carboxylase antibody. Secreted and total glucagon were quantified by radioimmunoassay using I125-labelled glucagon.

**Results:** Activation of AMPK by phenformin increased the percentage of secreted glucagon at both 0 and 17 mmol/l glucose. Compound C inhibited glucagon secretion at both glucose concentrations in the absence of further additions, and also attenuated the stimulation of secretion by phenformin.

**Conclusions:** We present evidence that activation of AMPK at low glucose concentrations may contribute to the stimulation of glucagon secretion from pancreatic alpha cells.