

P073 The inflammatory response in beta-cells: a radical approach

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Introduction/aims: Activation of inflammatory pathways has long been reported in obesity, insulin resistance and type 2 diabetes. However, the notion that excess circulating nutrients stimulates an inflammatory response in the islets of Langerhans and its effect on insulin secretion from the β -cells has attracted very little attention. Thus, the aim was to investigate the relationship between inflammatory pathways, induction of reactive oxygen species (ROS) and β -cell failure.

Results: In INS-1 cells IL-1 β induced the production of ROS in a time- and dose-dependent manner, with a maximal ROS production after 24 h IL-1 β exposure (>250% vs. control). This was accompanied by reduced insulin secretion, glucose intolerance and apoptosis. Pre-treatment with an IKK β -inhibitor reduced IL-1 β mediated NF κ B activity and reversed the production of ROS and cell death. Further more, IKK β inhibition re-established the loss of accumulated and glucose stimulated insulin secretion caused by IL-1 β exposure.

Conclusions: IL-1 β exposure increased the inflammatory pathways including a significant increase in the production of ROS. The inflammatory response was followed by glucose intolerance and β -cell apoptosis, which could be reversed by inhibition of IKK β .