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Cinnamic Acid Enhances Glucose-stimulated Insulin Secretion in MIN6 Cells

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Image Description

In the absence of cinnamic acid, insulin staining was found highly concentrated around the cell nucleus. In sharp contrast, in the presence of cinnamic acid insulin staining is dispersed throughout the cells and the insulin staining reduced significantly suggests that cinnamic acid enhanced glucose-stimulated insulin secretion. The representative surface plot analysis revealed that the height of the fluorescence intensity is much higher in control cells compared to cinnamic acid treated cells. In cinnamic acid treated cells, the height as well as color of insulin fluorescence decreased significantly, suggest that less insulin in the cells. The insulin was released from the cells to the media, resulted less height of insulin fluorescence in cinnamic acid treated cells. Taken together, these data suggest that cinnamic acid enhance glucose-stimulated insulin secretion in MIN6 cells (Figure 1).

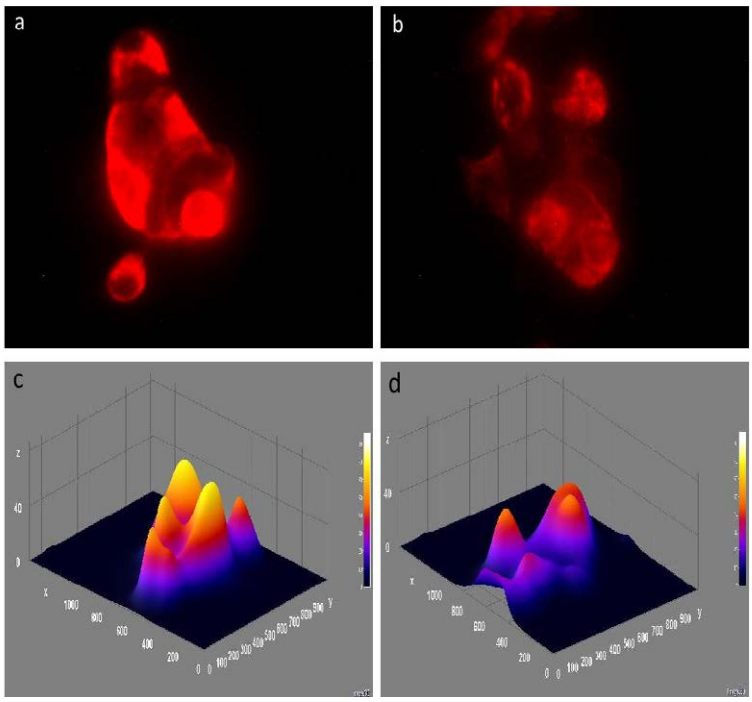

Figure 1: MIN6 cells were incubated at 37°C in the absence (a) or presence (b) of 100 µM cinnamic acid in Krebs-Ringer Bicarbonate buffer containing 20 mM glucose for 1 hour. After incubation, cells were fixed with 2% paraformaldehyde, permeabilized with 0.2% Triton X-100, blocked with donkey serum and immunostained for insulin by mouse anti-insulin (Sigma, St. Louis, MO, USA; Cat# I2018, clone K36AC10)/Alexa 594-donkey anti-mouse IgG (Jackson ImmunoResearch, Baltimore, PA, USA, Cat# 715-586-150). Images were visualized using a Nikon 90i microscope (Nikon, Japan) and images were acquired with Nikon DXM 1200C camera using NIS Elements image analysis software AR 3.0. The representative surface plot analysis in the absence (c) or presence (d) of cinnamic acid on MIN6 cells were generated using 3D interactive surface plots by Image J software to check the insulin florescence intensity in the cells.

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