Insulinotropic activity of Tinospora crispa extract: effect on β-cell Ca2+ handling

ABSTRACT

The mechanism of insulinotropic action of Tinospora crispa was investigated in vitro using an insulin-secreting clonal β-cell line, HIT-T15. The aqueous extract sensitizes the β-cell to extracellular Ca2+ and promotes intracellular Ca2+ accumulation which in turn causes increased insulin release. The increase in cytosolic Ca2+ concentration is due to stimulation of Ca2+ uptake from the extracellular medium and inhibition of Ca2+ efflux from the cytosol. That the mechanism of insulinotropic action of T. crispa is physiological suggests that the insulin secretagogue/s present in the extract could indeed be a potential source of a specific oral hypoglycaemic agent for the treatment of non-insulin-dependent diabetes mellitus.

Keyword: β-cell; Ca2+; Diabetes mellitus; Insulin secretion; Insulinotropic; Tinospora crispa