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Insulin secretagogue activity and inhibitory effects of *Cichorium intybus* on Streptozotocin- induced pancreatic β cell damage *in vitro* in RINm5F cells

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Abstract : This study focuses on the preventive effects of aqueous extract of *Cichorium intybus* (CIE) on streptozotocin (STZ) induced β-cell damage. Pancreatic β-cells or islet were treated with STZ in presence and absence of *Cichorium intybus* and the inhibitory effect of it against STZ toxicity were determined in RINm5F (RIN) rat insulinoma cells. Cell viability, Nitric oxide production and Insulin secretion were assayed. RIN cells were treated with STZ which induces cell damage. Treatment of cells with CIE (5µg and 50µg) has protected the pancreatic β cells from STZ mediated toxicity. Viability of RIN cells were checked by MTT assay. After treatment for 24 hours, STZ mediated damage was reduced in the group treated along with CIE. There was a remarkable increase in the viability of RIN cells around 65% was maintained. Nitrite concentration in the cell-free culture supernatant served as a reflection of NO production and was measured. The result implies that decrease in the NO around 50µM/ml from the content in the group treated with STZ along with CIE. Insulin producing capability CIE STZ mediated damaged cells were determined. Cells treated with CIE shows increase in the insulin content of the RIN cells around 77 µIU/ml. CIE has significantly reduced the toxicity of STZ by maintaining viability, reduced nitric oxide production and maintains insulin secretion compared with the group treated with treated only with STZ of pancreatic β cells.

Keywords: Insulin secretagogue activity, *Cichorium intybus*, pancreatic β cell damage, RINm5F cells.

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