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THE EFFECT OF A NOVEL CURCUMIN DERIVATIVE ON PANCREATIC ISLET REGENERATION IN EXPERIMENTAL TYPE-1 DIABETES IN RATS: LONG TERM STUDY

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Several studies highlight curcumin's benefit as a hypoglycemic agent, however; a limited number of reports present the importance of curcumin in improvement of pancreatic islets in diabetes. The antidiabetic effect of a novel curcumin derivative and its effect on pancreatic islet regeneration in experimental type I diabetes were investigated. Streptozotocin-diabetic rats were treated orally with the novel curcumin derivative (NCD) for 40 days. Fasting plasma glucose, insulin and C-peptide were determined periodically for 10 months. Histopathology was performed to allow the assessment of pancreatic islet morphology. Insulin and CD105 were detected immunohistochemically. NCD treated diabetic rats showed significantly lowered plasma glucose and increased plasma insulin and C-peptide levels. Plasma insulin and

C-peptide continued to increase for ten months reaching levels significantly higher than the basal level. NCD treated rats showed the appearance of primitive cell collections, large insulin positive cells and CD105 positive cells in the adipose tissue infiltrating the pancreatic tissues. This was followed by the gradual appearance of insulin positive cells in the islets while, CD 105 positive cells remained in the adipose tissue. After 5 and up 10 months from the onset of diabetes, treated rat pancreas showed, well developed larger sized islets with disappearance of primitive cell collections and CD 105 positive cells. The NCD possesses antidiabetic actions and enhanced pancreatic islets regeneration properties.

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