Peritoneal implantation of macroencapsulated porcine pancreatic islets in diabetic rats ameliorates severe hyperglycemia and prevents retraction and simplification of hippocampal dendrites.

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Abstract

The hippocampus of rats with uncontrolled insulin-dependent diabetes undergoes retraction and simplification of apical dendrites of the CA3 pyramidal neurons and synaptic rearrangements within messy fiber terminals that could alter hippocampal connectivity and function.

The intraperitoneal implantation of hydrophilic agarose macrobeads containing porcine islets for 17 days in rats with streptozotocin-induced diabetes results in normalization of body weight gain, significant control of hyperglycemia and prevention of hippocampal dendritic remodeling, and therefore, provides an effective therapeutic option.

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