

Study of the regenerative capacity of the islet of Langerhans

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1989 Fiscal Year Final Research Report Summary

Study of the regenerative capacity of the islet of Langerhans

Research Project

Project/Area Number

61570641

Research Category

Grant-in-Aid for General Scientific Research (C)

Allocation Type

Single-year Grants

Research Field

Digestive surgery

Research Institution

Kanazawa University

Principal Investigator

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Project Period (FY)

1986 - 1988

Keywords

Pancreatectomy / diabetes mellitus / poly (ADP-ribose) synthetase inhibitor / regeneration of islet B cells / 膵B細胞の再生

Research Abstract

1. 3-Aminobenzamide as poly(ADP-ribose) synthetase inhibitor was given to 90% depancreatized rats. The regenerative activities of B cells were examined in attempt to clarify the mechanism of preventing surgical diabetes. On the 30th day after pancreatectomy, the islets treated with saline were reduced and the number of B cells decreased. In depancreatized and 3-aminobenzamide treated rat (AB), the islets were enlarged and hyperplasia of B cells was seen. Autoradiography and stathmokinetic studies showed labeling and mitotic indices of B cells in AB had a higher level than those of saline group. These results suggest that poly(ADP-ribose) synthetase inhibitor can induce self-replication of B cells in partially depancreatized rats.

2. While the onset of diabetic state was observed in 82% of depancreatized rats without 3-aminobenzamide, 29% of 3-aminobenzamide treated rats fell into diabetic state the morphologic examination of remnant pancreas revealed the islets from 3-AB-treated rats were enlarged. The percentage of labelled B cells reached a peak in the rats killed 3 and 5 days after operation, and then declined gradually, the results indicate that 3-AB may prevent diabetes mellitus in partially depancreatized rats by maintaining the function of B cells.

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