Transformational Alteration of Human pancreatic Gamma-Glutamyl-transpeptidase (gamma-GTP)

1989 Fiscal Year Final Research Report Summary

Transformational Alteration of Human pancreatic Gamma-Glutamyl-transpeptidase (gamma-GTP)

Research Project

Project/Area Number

63570318

Research Category

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

Allocation Type

Single-year Grants

Research Field

Gastroenterology

Research Institution

Kanazawa University

Principal Investigator

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Keywords

gamma-GTP / Pancreatic Cancer / Sugar chain / Hepatocellular Carcinoma / Monoclonal antibody / Transformational alteration

Research Abstract

To elucidate the specific changes of pancreatic gamma-glutamltranspeptidase (gamma-GTP) associated with malignant transformation, some properties of gama-GTP purified from pancreatic cancer were compared with those of gamma-GTPs from normal pancreas and other tissues. Four of five pancreatic cancer gamma-GTPs showed distinctly slower electrophoretic mobility than the normal enzymes. Isoelectric points of pancreatic cancer gamma-GTPs varied in each case, but all of them were higher than those of normal enzymes. This difference in isoelectric points of gamma-GTPs between cancerous tissue and normal tissue was reduced by neuraminidase treatment. Lectin affinity chromatography revealed two of five pancreatic cancer gamma-GTPs with a greater affinity to concanavalin A (Con A) than normal pancreas gamma-GTPs. Four of five pancreatic cancer gamma-GTPs had a greater affinity to Lens culinaris agglutinin (LCA) than normal pancreas gamma-GTPs. Normal pancreas had little affinity to phaseolus vul garis erythroagglutinating (E-PHA), but two of five pancreatic cancer gamma-GTPs had an apparent affinity to E-PHA and one of them had a slight affinity to E-PHA. These results indicate that the transformational changes of pancreatic cancer gamma-GTP are mainly induced in the sugar chains of the enzyme molecules resulting in a lower content of sialic acid and higher content of fucose and bisecting GlcNAc residue as compared with the normal pancreatic enzymes.
Furthermore, to develop the monoclonal antibody (MAb) that recognize the specific alteration of sugar chain of pancreatic cancer gamma-GTP, we prepared the MAb against gamma-GTP from pancreatia cancer using the hybridoma technique. All of the MAbs were reactive with gamma-GTPs from not only

pancreatic cancers but also other tissues, and could not recognize sugar chain but peptide portion of gamma-GTP. This is considered to be due to the fact that the immunogenicity of sugar chain can be weaker in comparison with that of peptide portion. We are now preparing the specific MAb, considering a new device.▲ Less

Research Products (14 results)

All | Other

All | Publications (14 results)

[Publications] 澤武紀雄ほか: "膵癌の腫瘍マ-カ-" 内科. 62. 244-249 (1988)

[Publications] 太田秀樹: "Tumor markerによるfollow-upーーγ-GTP" 日本臨床. 47. 1114-1118 (1989)

[Publications] 澤武紀雄ほか: "消化器癌における癌性糖鎮抗原" 臨床病理. 37. 509-516 (1989)

[Publications] H.Ohta,et al.: "Characterization on of γ-GTP from human pancreatic cancer" Pancreas. 5. 82-90 (1990)

[Publications] Y.Satomura,et al.: "Expressin of various sialylated carbohydrate antigen in malignant and non-malignant pancreatic tissues" Pancreas.

[Publications] H.Ohta,et al.: "Characterization of γ-GTP from hepatocellular carcinoma, and comparison with the enzymes from normal liver cirrhotic liver and other tissues" Hepatology.

[Publications] N. Sawabu, et al: "Cancer-associated carbohydrate antigens which are available to serum diagnosis" Jpn. J. Cancer Chemother, 15(4) : 1091-1101, 1988.

[Publications] N. Sawabu, et al: "Tumor markers of pancreatic cancer" Int. Med, 62(2): 244-249, 1988.

[Publications] H. Ohta, et al: "Follow-up by tumor marker-gamma-GTP" Jpn. J. Clin. Med, 47(suppl): 1114-1118, 1989.

[Publications] N. Sawabu, et al: "Present aspect of tumor markers for pancreatic cancer" Clin. Gastroneterol, 86(5): 640-649, 1989.

[Publications] H. Kawakami, et al: "Clinical evaluation of serum sialyl SSEA-1 (SLX) in diagnosis of cancer" Jpn. J. Gastroenterol, 86(5): 1141-1148, 1989.

[Publications] H. Ohta, et al: "Characterization of gamma-GTP from human pancreatic cancer" Pancreas, 5(1): 82-90, 1990.

[Publications] Y. Satomura, et al: "Expression of various sialylated carbohydrate antigens in malignant and nonmalignant pancreatic tissue" Pancreas.

[Publications] H. Ohta, et al: "Characterization of gamma-GTP from hepatocellular carcinoma, and comparison with the enzyme from normal liver, cirrhotic liver and other tissues" Hepatology.

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