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2001 Fiscal Year Final Research Report Summary

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Research Project

Project/Area Number

12670469

Research Category

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Allocation Type

Single-year Grants

Section

一般

Research Field

Gastroenterology

Research Institution

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Research Abstract

We previously reported that intraportal appearance of glucagon-like peptide-1 (GLP-1) facilitates the hepatic vagal afferent activity (the impulse discharge rate) and further Reads to an increase of the pancreatic vagal efferent activity. The results indicated the presence of the vagal hepato-pancreatic reflex pathways, because the reflex was not observed in hepatic vagotomized rats, suggesting another nature of GLP-1 as neuroincretin in the enteroinsular axis. In the present study we further examined whether the vagal hepato-gastric reflex pathways, I.e., the reflex pathways between the hepatic vagi afferent information induced by GLP-1 and the gastric vagal efferent

information. The same doses of GLP-1 as those in our previous study were employed for the intraportal injection in rats anesthetized with urethan and chloralose ; a 1-min bolus intraportal injection of 0.05, 0.2, or 4.0 pmol GLP-1 as aphysiologic, periphysiologic, or pharmacologic dose, respectively, was performed, because the 0.2 and 4.0 pmol injection, and 0.05 pmol weakly, facilitated the hepatic vagal afferents compared with vehicle injection. The intraportal injections attenuated tha gastric vagal efferents in normal, but not hepatic vagotomized, rats, suggesting a neurogenic enterogastrone effect. This pivotal role of the GLP-1-induced changes of the hepatic afferents was also observed upon intrafemoral injections at the GLP-1 doses. These results suggest a unique role of GLP-1 in regulation of postprandial nutrient homeostasis through the vagal chemoreception of GLP-1released into the portal vein.

Research Products (4 results)

All | Other

All | Publications

[Publications] Nakagawa A, Azuma S, Nakabayashi H: "Novel gastroinsular axis involving a gastric transmural glucose flux and vagal mediation"Am J Physiol Endocrinol Metab. 281. E304-E314 (2001)

[Publications] Nishizawa M, Nakabayashi H, et al.: "The hepatic vagal reception of intraportal GLP-1 is via receptor different from the pancreatic GLP-1 receptor"J. Auton Nerv Syst. 80. 14-21 (2000)

[Publications] Nakagawa A, Azuma S, Nakabayashi H: "Novel gastroinsular axis involving a gastric transmural glucose flux and vagal mediation"Am J Physiol Endocrinol Metah. 281. E304-E314 (2001)

[Publications] Nishizawa M, Nakabayashi H, Kawai K, ItoT, Kawakami S, Nakagawa A, Niijima A, Uchida K: "The hepatiavagal reception of irttraportal GLP-1 is via receptor different from the pancreatic GLP-1 receptor"J Auton Nerv Syst. 80. 14-21 (2000)

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