哺乳動物における小腸運動の周期性調節機構の解明

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1988 Fiscal Year Final Research Report Summary

Study of the frequency regulatory mechanism of the slow wave in mammalian small intestine

Research Project

Project/Area Number

62570982

Research Category

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

Allocation Type

Single-year Grants

Research Field

Biological pharmacy

Research Institution

Kanazawa University

Principal Investigator

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1987 – 1988

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Slow wave / Small intestine / Frequency regulation / cAMP

Research Abstract

Slow wave in the mammalian small intestine is a rhythmic depolarization of 2-5 sec duration, forming the basis of rhythmic contractions such as the pendulum or segmenttion. The slow wave has been suggested to originate in the interstitial cells of Cajal located in the Auerbach plexus of the small intestine. In the present study, mechanism of the regulation of the slow wave frequency was pursued by finding the drugs which can modulate the rhythmicity of the slow waves. Slight increase of the potassium concentration in the bathing solution decreased the frequency of slow wave, and induced the ectopic focus generating the slow wave of different frequency. Dibutyryl cyclic AMP or the drugs which have been shown to increase the content of intracellular cyclic AMP (cAMP) in various types of cells decreased the frequency of slow waves. However, drugs known to increase the cAMP content in the smooth muscle cells did not affect the frequency of the slow wave. Addition of Ca did not counteract the effects of cAMP. These

results suggest that the regulation of slow wave frequency was made by neurotransmitters released from the nerves in the Auerbach plexus acting on the Interstitial cells of Cajal through the second messenger of cAMP.

Research Products (2 results)

All Other

All Publications (2 results)

[Publications] N.Suzuki: Japan.J.Smooth Mus.Res.

[Publications] N. Suzuki: "Effects of cyclic AMP on the frequency of slow waves in mammalian small intestine" Japan. J. Smooth Mus. Res.

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