Symposium on substance P

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1961

Naučno društvo NR Bosne i Hercegovine

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NAUČNO DRUŠTVO NR BOSNE I HERCEGOVINE

POSEBNA IZDANJA
Vol. I

ODJELJENJE MEDICINSKIH NAUKA
Knjiga 1

Urednik

P. STERN
redovni član Naučnog društva NR BiH

SIMPOZIJUM
O
SUPSTANCIJI P

održan 9. i 10. VI 1961. god.

SARAJEVO
1961

F. LEMBECK

LACK OF INTERACTION BETWEEN SUBSTANCE P AND DRUGS ON THE INTESTINE

The interaction between a pharmacologically active substance occurring in the tissue and a drug is usually reflected

(a) by a modification (potentiation, inhibition) of its action by the drug,

(b) by a change of its concentration in the tissue under the influence of a drug.

In the central nervous system an interaction between SP and several centrally acting drugs has been observed (Zetler, 1956, 1959, 1960). The amount of SP in the brain also depends to some extent on the interaction of various drugs (Zetler and Ohnesorge, 1957; Stern and Kocić-Mitrović, 1960). But so far no informations are available concerning interactions between SP and other compounds on the intestine. As Dr. Huković reports at this symposium, a large number of drugs has been tested for possible inhibitory effects on the action of SP. With the still doubtful exception of two substances no drug has been found, which specifically inhibits the action of SP. We tried bradykinin, oxytocin, and kallidin, but they were ineffective, too. The only substance which has been found to inhibit the action of SP was SP itself when given in large doses. This effect is due to tachyphylaxis.

Dr. Petschke and I investigated whether the activity of SP in the small intestine of the rat could be influenced by drugs. Morphine, physostigmine or atropine were injected to rats 30 min. later the animals were sacrified and extracts were made from the intestine. No differences in the SP content between the three groups were found. An influence of the intestinal motility on the SP content of the gut would possibly have been revealed by these experiments, since the gut of the physostigmine-treated animals was strongly contracted and empty, in contrast to the other two groups. The tissue content of a substance does, however, not allow conclusions about a change in rate of synthesis or release as long as synthesis and release of this substance go parallel.

The lack of specific inhibitors may lead to the assumption of a specific receptor for SP. It also could be that the mode of action of

ail the smooth muscle stimulating peptides differs from that of the smooth muscle stimulating amines since no inhibitors of the action of the other peptides are known, too. The experiments on the tissue concentration of SP suggest that factors other than the motility are more likely to influence the intestinal content of SP.

Summary

In contrast to the central actions of SP its effect on the smooth muscle could not be influenced by antagonists in a specific manner except by the tachyphylaxis observed after high doses of SP.

Whereas some drugs had effects on the SP concentration of the brain, drugs exerting an influence on the motility of the gut were found to be without an effect on the SP concentration of the intestine.

IZOSTAJANJE UZAJAMIČNOG DJELOVANJA SP I LIJEKOVA U ODNOSU NA CRIJEVO

Za razliku od centralnih efekata, efekti SP na glatke mišiće ne podliježu utjecaju specifičnih antagonista, izuzevši tahifilaksiju, koja se zapaža poslije velikih doza SP.

Dok neki lijekovi imaju utjecaja na koncentraciju SP u mozgu, lijekovi koji utječu na motilitet crijeva nemaju nikakvog utjecaja na koncentraciju SP u crijevu.

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