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Antagonism of Nicotine Action by Cocaine.

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In an attempt to analyze the action of cocaine on excised smooth muscles, it was discovered that treatment of a segment of mammalian intestine with nicotine following treatment with cocaine, failed to elicit the usual nicotine response. As is well known, the action of nicotine on excised intestinal strips is one of augmentation, followed by depression, with gradual recovery. Some segments, however, are only depressed by nicotine. The experiment was tried with Magnus preparations of small intestine and colon of the cat, dog, rabbit and guinea pig, Tyrode solution being used as the bath. For every segment of intestine treated with cocaine before the addition of nicotine to the bath, there was used an adjacent control segment, treated with nicotine alone. Out of nearly a score of trials, only once did cocaine fail to prevent nicotine action. Contact of cocaine with the tissue for a period of 3 minutes was sufficient to prevent nicotine action, even if the cocaine solution were replaced with fresh Tyrode solution before administration of the nicotine. The concentration of nicotine used was from 1:250,000 to 1:50:000 and that of cocaine, 1:10:000.

Cocaine failed to prevent depression of intestinal segments by atropine.

In a previous report on cocaine[1] it was suggested that this alkaloid acted mainly on smooth muscle. The antagonism of nicotine by cocaine and the failure of cocaine to antagonize atropine, would indicate that cocaine affects the ganglia, or at least some portion of the enteric nervous system, as well as the smooth muscle.

[1] Thienes, C. H., *J. Pharm. Exp. Ther.*, 1928, in press.