Rats so treated were found, in a recent study, to have values for total work of 87,645 to 131,261, with an average of 112,164 recorder revolutions.[9]

Comment. The amorphous fraction is highly effective in protecting the adrenalectomized rat against a loss of weight. It is the most effective fraction when tested with renal function as a criterion in the adrenalectomized dog. In these respects the compound 17-hydroxy-11-dehydrocorticosterone is ineffective. It does not protect the adrenalectomized rat against a loss in weight[9, 10] although in sufficient dose it will prolong its survival. Large amounts are required to prolong the life of the adrenalectomized dog.[10, 11] With respect to muscular work, however, the relationship is reversed. The compound 17-hydroxy-11-dehydrocorticosterone has a marked effect on the ability of the adrenalectomized rat to work immediately after operation and during its period of survival.[1, 9] The amorphous fraction given to the adrenalectomized rat either immediately after operation or during the period of survival appeared to be less effective when the maintenance of the efficiency of muscle was used as a criterion. The results of this and other studies[1–3, 6, 9] indicate that the compounds which have the greatest effect on carbohydrate metabolism also have the greatest effect on the efficiency of muscular activity and that the compounds that have the greatest effect on renal function have a relatively slight effect on carbohydrate metabolism and on the efficiency of muscle.

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Ineffectiveness of Histaminase in Anaphylactic Shock in Guinea Pigs.*

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Best and McHenry's[1,2] discovery of a histamine-inactivating

9 Ingle, D. J., *Endocrinology*, 1940, **27**, 297.

10 Wells, B. B., and Kendall, E. C., *Proc. Staff Meet., Mayo Clin.*, 1940, **15**, 324.

11 Ingle, D. J., and Mason, H. L., PROC. SOC. EXP. BIOL. AND MED., 1938, **39**, 154.

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1 Best, C. H., *J. Physiol.*, 1929, **67**, 256.

2 Best, C. H., and McHenry, C. W., *J. Physiol.*, 1930, **70**, 349.

substance in the gastro-intestinal tract and kidney of the dog initiated various observations upon the effect of this material in certain well established histamine reactions. Certain workers were unable to produce any change of the histamine effect upon the guinea pig uterus,[3] the blood pressure of cats and rabbits,[3] the bronchial volume of cats,[3] or the gastric response in humans,[3, 4] and dogs.[5] With oral, intravenous, or subcutaneous use of histaminase, Bosse[6] failed to demonstrate any effect upon the Shwartzman phenomenon in rabbits.

However, other investigators report a rather striking histamine-inactivation with histaminase. Included in these reports is the work of MacGregor and Peat,[7] Suzuki,[8] Unger and Bolgert.[9] Of special interest is the report of Karady and Browne[10] who were able to prevent death in all of 20 guinea pigs subjected to anaphylactic shock by pretreatment of these animals with histaminase injected into the jugular vein.

The following experiments were performed in an attempt to confirm the results of Karady and Browne.[10]

Experiment I. Fifteen guinea pigs averaging 350 g in weight were sensitized by the intraäbdominal injection of a 1 :4 egg albumin-normal saline mixture. Fourteen days later 7 of the animals were given one unit of histaminase (Sharp and Dohme TDS-638) in saline by the intraäbdominal route and about 5 hours later all animals received a shocking dose of one cc of 1 :2 egg albumin-normal saline mixture intraäbdominally. The intracardiac method of injection,

TABLE I.

	Controls			Histaminase		
Exp.	No.	Dead	Survivals	No.	Dead	Survivals
I*	7	5	2	6	0	6
II†	8	4	4	9	4	5
III†	11	7	4	12	6	6
IV*	17	5	12	17	6	11
V†	32	20	12	32	19	13
Total	75	41	34	76	35	41

*Histaminase of Sharp and Dohme Co., Philadelphia, Pa.
†Histaminase of Winthrop Chemical Co., New York, N. Y.

3 Felix, I., *Acta Med. Scandinav.*, 1938, **95**, 1.
4 Biguria, F., and Canzanelli, A., *Am. J. Physiol.*, 1934, **110**, 243.
5 Atkinson, A. J., and Ivy, A. C., *Am. J. Physiol.*, 1934, **107**, 168.
6 Bosse, M. D., *J. Lab. and Clin. Med.*, in press.
7 McGregor, R. G., and Peat, S., *J. Physiol.*, 1933, **77**, 310.
8 Suzuki, R., *J. Med. Assn. Formosa, Taiwan, Igakkai Zasshi*, 1937 **47**, 68.
9 Ungar, G., and Bolgert, M., *Compt. rend. soc. d. Biol.*, 1938, **192**, 1107.
10 Karady, S., and Browne, J. S. L., *J. Immunol.*, 1939, **37**, 463.

used in two animals, was discarded because death resulted within 30 seconds. The results are tabulated in Table I.

Autopsy disclosed pulmonary edema and emphysema in all of the animals that died.

Experiment II. Seventeen guinea pigs averaging 300 g were sensitized with one cc of 1:1 egg albumin-saline mixture intraäbdominally. Fourteen days later 9 animals were given one unit of histaminase (Winthrop T-360) in saline intraäbdominally. All animals received a shocking dose of one cc of 1:1 egg albumin-normal saline mixture by the same route 4 hours later (Table I). Autopsy revealed pulmonary edema and emphysema in only 2 animals of each group of 4 that died.

Experiment III. Twenty-four guinea pigs averaging 300 g were sensitized by intraäbdominal injection of 1:1 egg albumin-normal saline mixture. Fourteen days later 12 animals received a subcutaneous injection of 2 cc of a freshly prepared saline suspension containing 3 units of histaminase (Winthrop T-360). At the same time 5 control animals were given a shocking dose of 0.5 cc of 1:1 egg albumin-saline mixture. In 24 hours a second similar subcutaneous injection of histaminase was administered to the first 12 animals. Four hours later all animals were given an intraäbdominal shocking dose of 0.5 cc of 1:1 egg albumin-normal saline mixture intraäbdominally. The results are given in Table I. In the control group one animal was excluded because of accidental death. In the histaminase group one death occurred without the findings of anaphylactic shock at autopsy. Autopsy of all other fatalities disclosed the typical pulmonary edema and emphysema.

Experiment IV. Thirty-four guinea pigs averaging 250 g were sensitized by the intraäbdominal injection of one cc of 1:1 egg albumin-normal saline mixture. Fourteen days later, 17 animals received one unit of histaminase (Sharp and Dohme 777-L5) intraabdominally. The shocking dose of 0.5 cc of 1:1 egg albumin-normal saline mixture was administered to all animals 4 hours afterwards. The results are tabulated in Table I. Autopsy showed characteristic pulmonary edema and emphysema in all animals that died, except one in the histaminase group.

Experiment V. In this group the technic of Karady and Browne[10] was employed. Sixty-nine guinea pigs were sensitized with 3 cc of a 1:1 egg albumin-normal saline mixture subcutaneously. On the 16th day, 32 of the animals received 3 units of histaminase (Winthrop T 360) into the jugular vein (without anesthesia) 15 minutes before an intraäbdominal shocking dose of 2 cc of 1:1 egg albumin-normal saline mixture, while 5 were given the histaminase into the

jugular vein without the subsequent shocking dose of egg albumin. The latter 5 animals showed no ill effect of the intravenous injection. The results are given in Table I. Autopsy of the fatalities disclosed typical pulmonary edema and emphysema in 17 of the controls, while in 2 animals the emphysema was patchy, and in one animal gross lesions were absent. In the fatalities of the histaminase group, findings typical of anaphylaxis were present in 18 of the animals, while in the remaining one, emphysematous blebs were present.

Discussion. The first experiment involving a small group in which the administration of histamine apparently effected a survival rate of 100%, was very promising and appeared to confirm the findings of Karady and Browne. However, subsequent experiments involving a total number of animals more than 3½ times as great as that used by the above workers failed to show any effect of the histaminase preparations on anaphylactic shock of guinea pigs. The results were negative when the histaminase preparations were injected intravenously or intraäbdominally.

Conclusion. The protective action of histaminase on anaphylactic shock of guinea pigs as reported by Karady and Browne could not be confirmed.

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Bacteriostatic and Bactericidal Substances Produced by a Soil Actinomyces.*

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The ability to antagonize other microörganisms is widely distributed among actinomycetes, a large group of microörganisms, present in soils, composts, water basins, dust, and in other natural substrates.[1] The nature of the antagonistic action exerted by these

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[1] Greig-Smith, R., *Proc. Linn. Soc. N. S. Wales*, 1917, **42**, 162; Lieske, R., *Morphologie und Biologie der Strahlenpilze*, Leipzig, 1921, p. 138; Gratia, A., and Dath, S., *Compt. rend. Soc. Biol.*, 1925, **93**, 451; 1926, **94**, 1267; Welsch, M., *Compt. rend. Soc. Biol.*, 1937, **124**, 575; Millard, W. A., and Taylor, C. B., *Ann. Appl. Biol.*, 1927, **14**, 202; Borodulina, J. A., *Microbiologia*, 1935, **4**, 561; Waksman, S. A., and Foster, J. W., *Soil Sci.*, 1937, **43**, 69; Nakhimovskaia, M. I., *Microbiologia*, 1937, **6**, 131; Krassilnikov, N. A., and Koreniako, A. I., *Ibid.*, 1939, **8**, 673.