

Experiment 3, June 17, 1924.

A. Rat weighing 185 gm.

11:28 A. M. Injected 10 mg. cocain hydrochloride (1 per cent solution) intraperitoneally. Exposed to polarized light. Temperature 30.5° C.

11:34 Trembling and weak.

11:36 Collapse.

11:43 Violent convulsions and death.

B. Rat weighing 185 gm.

11:29 A. M. Injected 10 mg. cocain hydrochloride (1 per cent solution) intraperitoneally.

11:37 Slight excitement.

11:45 Apparently normal condition.

12 M. No change.

4:30 P. M. No change.

Next day; recovered.

Similar results were obtained with santonin, and to some extent with solutions of phenol. Most of the above experiments, some fifty in number, were performed in the spring and early summer of 1924. Protracted illness of the author necessitated a temporary discontinuance of the experimentation. It is expected to resume the investigations. The expenses of this research were defrayed in part by a grant from the Rockefeller Institute for Medical Research.

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II.

The influence of polarized light on the action of some ferments:

A contribution to photo-pharmacology.

By DAVID I. MACHT.

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E. S. Semmens¹ reported some very interesting observations on the influence of polarized light on the action of diastase. Studying starch granules with a microscope Miss Semmens noted that, when these were illuminated by light passing through a Nicol

¹ Semmens, E. S., *Nature*, 1923, iii, 49.

prism, the conversion of starch into sugar took place more rapidly than in ordinary light. The present author experimenting on the biological effects of polarized light repeated these studies on diastase by a different method, and studied, furthermore, some other enzymes.

The effect of polarized light on the action of diastase was studied by using solutions of starch, adding definite quantities of taka-diastase solution to the same, and noting chemically, by the iodine reaction, the rapidity of diastatic enzyme action, in the dark on the one hand, and in polarized and non-polarized lights at the same temperature on the other hand. Polarized light was obtained through a large Nicol prism in some experiments, and by means of a pile of glass plates in others. The results obtained corroborated fully the observations of Miss Semmens. The conversion of starch into sugar took place more rapidly in polarized light than in non-polarized light of the same intensity.

Two other ferments were studied in this connection: rennin and catalase.

The rapidity of milk coagulation after addition of equal quantities of rennin to given amounts of milk was studied in polarized and non-polarized light. It was found that the clotting of milk took place more rapidly in polarized light than in non-polarized light of the same intensity and at the same temperature.

The effect of polarized light on the activity of blood catalase was studied also. In this case no constant difference was found in the catalase reaction of samples of blood exposed to polarized light and to non-polarized light.

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III.

The influence of polarized light on yeast and bacteria.

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In connection with the experiments on the biological effects of polarized light described in the preceding communications, a