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EFFECT OF POLARIZED LIGHT ON THE PHARMACOLOGICAL PROPERTIES OF SOME DRUGS[1]

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Introduction

While the effect of light on chemical reactions has been known for a long time, and photochemistry has been receiving adequate attention for many years, the influence of light and other radiations on the pharmacological properties of drugs has not been studied until comparatively the last few years.

In the last decade or two, attention has been directed to the important role played by ultraviolet rays on the toxicity of a number of dyes, and very much more recently the effect of such radiations has come into prominence in connection with the marvelous strides in our knowledge of the vitamins. The earlier work on the dyes is summarized by Tappeiner and Jodelbauer[2] who have reviewed the previous work on the subject and contributed some original observations. These authors have found that eosin, while relatively non-toxic for paramecia in the dark, is very destructive to the same animalcules when irradiated by ultraviolet rays. Straub[3] analyzed this photo-dynamic effect further and obtained some evidence pertaining to oxygen being activated in the course of this phenomenon. Noguchi[4] and others have studied effects of light on the bactericidal properties of some dyes. Amsler and Pick[5] and Kolm and Pick,[6] studying the effects of eosin solutions on isolated organs, found that that compound was much more active when irradiated by ultraviolet rays than in the dark. Macht and Teagarden[7] studied the effect of ultraviolet irradiations on the fluorescent solutions of quinine and quinidine sulfates and found that these solutions were more active when so irradiated. Recently Macht[8] noted that the toxicity of sodium benzoate for yeast is much greater when exposed to sunlight than in the dark, and the remarkable experiments of Hess

[1] Read before a joint session of the Organic and Biological Divisions of the American Chemical Society at the Richmond meeting, April 12, 1927. A preliminary note on part of the subject was published by David I. Macht and J. C. Krantz, Jr. [*J. Am. Pharm. Assoc.*, **16**, 106 (1927)].

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[5] Amsler and Pick, *Arch. exptl. Path. Pharmakol.*, **82**, 88 (1918).

[6] Kolm and Pick, *ibid.*, **86**, 1 (1920).

[7] Macht and Teagarden, *J. Pharmacol.*, **22**, 1 (1923).

[8] Macht, *Proc. Soc. Exptl. Biol. Med.*, **23**, 638 (1926).