Sensitization of the Skin of Mice to Light by Carcinogenic Agents

WHITE mice painted twice a week for three weeks with benzpyrene in benzene are found to be sensitized to light. The mouse is painted and exposed to direct sunlight for a half to one hour; during the exposure the skin of the painted area becomes red and markedly œdematous. There is no latent period to this reaction; within a few minutes of the exposure the mouse becomes ill at ease, scratches the painted region and tries to hide it from the sun. The next day, the area shows a definite dermatitis.

Unpainted white mice having the hair closely clipped over the same region showed no reaction after three hours' exposure or at any subsequent time; unpainted areas in the experimental mice gave no reaction, nor did mice painted with the solvent.

Exposures to infra-red radiations and to ultra-violet radiations did not give rise to these reactions. By dividing the visible spectrum into three with Kodak gelatine filters, it was found that only the blue-violet light was effective: this corresponds with the absorption spectrum of benzpyrene.

Similar reactions have been obtained with tar and with di-benzenthracene, but which part of the spectrum is responsible has not yet been ascertained.

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Gonadotropic Activity of Amphibian Anterior Pituitary

PREVIOUS attempts, using infantile mice or rats as test animals, to demonstrate the presence of a gonadotropic substance in the anterior pituitary of frogs have been entirely negative[1]. Since implantation of frog's pituitary into frogs causes ovulation, Zondek comes to the conclusion that the frog's pituitary contains a gonadotropic substance which is inactive in warm-blooded animals. The negative results obtained by Lipschutz and Paez and Zondek were probably due to the fact that the amount of pituitary tissue implanted was too small. Adams and Tukey, however, injected saline suspensions of from 16 to 96 frogs' pituitaries into each infantile mouse and still obtained negative results.

In view of the interest of this work from the point of view of comparative endocrinology, similar experiments were performed using *Xenopus lævis*, the South African clawed frog, as donor. Littermate female white mice 19–22 days old were used as recipients. In each experimental series one or two animals received a subcutaneous implant of frog anterior pituitary tissue; two to four mice received control implants of one of the following frog organs: *brain, kidney, muscle, spleen, liver, ovary*; one to three animals served as normal untreated controls. 72 hours later the mice were examined for opening of the vaginæ. They were then killed and the ovaries and uteri removed. The ovaries were dissected away from their oviducts and capsules. Fat and loose connective tissue were carefully removed from the uteri. All organs were immediately weighed on a torsion balance.

Implantation of 3·5 mgm. of anterior pituitary caused opening of the vagina but had no effect on the weights of either ovaries or uterus. Implantation of 8–20 mgm. caused opening of the vagina in all but two of twelve animals, also an increase in the weight of the ovaries and a two- to fourfold increase in uterine weight. In two mice hæmorrhagic follicles (*blutpunkte*) were present in both ovaries; the uteri weighed 31·0 mgm. and 32·5 mgm. (controls, 8 mgm.) and the ovaries 4 mgm. and 5 mgm. (controls, 2 mgm.). In seven animals uterine weights of 17–23 mgm. were obtained. All control implants gave negative results. A few of the enlarged ovaries were sectioned and showed definite follicular growth.

The ovarian, uterine and vaginal responses obtained in these experiments provide definite evidence that the gonadotropic substance of amphibian anterior pituitary can activate the mammalian reproductive apparatus.

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Aug. 24.

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[1] Lipschutz, A., and Paez, R., *Compt. rend. Soc. biol.*, **99**, 693 (1928). Zondek, B., *Arch. Gynäk.*, **144**, 133 (1930). Adams, A. E., and Tukey, G. R., *Anat. Rec.*, **67**, Supp. 2 (1937).

Vitamin P

ACCORDING to Bentsáth and Szent-Györgyi[1], their experiments on the influence of vitamin P on the course of development of experimental scurvy[2] have been repeated at their request in several laboratories with the result that their observations were partly corroborated and partly not confirmed. This, they assert, is due to the fact that vitamin P requires for its activity the presence of traces of ascorbic acid.

In view of the fact that I repeated the above work independently, it is of interest to compare my results[3] with the above. I was unable to record any vitamin P activity with daily doses of 1 mgm. of either 'citrin', hesperidin or a mixture of hesperidin and eriodictyol. When, however, sub-optimal preventive doses (0·1 mgm. and 0·2 mgm. of *l*-ascorbic acid a day) were administered alone to the experimental animals, a clinical and pathological condition was produced which resembled that obtained by Szent-Györgyi and his collaborators after the administration of vitamin P. This condition has always been known to occur when antiscorbutic doses lower than the minimum prophylactic dose have been offered to guinea pigs on well-balanced scorbutic diets, including the Sherman - La Mer - Campbell diet, which Bentsáth, St. Rusznyák and Szent-Györgyi used in their original investigation.

According to Bentsáth and Szent-Györgyi's latest view[1], one is driven to the conclusion that the basal diet I used (bran, barley meal, middlings, fish meal, crushed oats and autoclaved milk) contained no traces of ascorbic acid, which is undoubtedly true, but contained the hypothetical vitamin P, whilst the Sherman - La Mer - Campbell diet *as used by them* contained traces of ascorbic acid, although this is not evident from their negative control experiment[2], but no vitamin P; alternatively, the biological action observed by them was due to the contamination of their 'citrin', etc., with traces of ascorbic acid. The object of this note is to record the bearing of my results on the modified view of Szent-Györgyi and his collaborator, which was advanced since the appearance of my paper, in the hope that it will help in the solution of this elusive subject.

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Sept. 7.

[1] Bentsáth, A., and Szent-Györgyi, A., NATURE, **140**, 426 (Sept. 4, 1937).
[2] Bentsáth, A., St. Rusznyák and Szent-Györgyi, A., NATURE, **138**, 798 (1936).
[3] Zilva, S. S., *Biochem. J.*, **31**, 915 (1937).