

equivalent to 50 R.U. were added to the extracted boiled urine and a similar amount to the extracted unboiled urine. Both samples were extracted twice with 1/10 volume of cresol in the usual manner. From the extracted boiled urine, 450 mg. of powder were obtained which contained 1 R.U. per 7 to 8 mg., indicating a recovery of 50 to 65 R.U. The extracted unboiled urine yielded a powder weighing 230 mg. which contained 1 R.U. per 5 to 6 mg., a recovery of 40 to 50 R.U. Both of these results would indicate a quantitative recovery as they are well within the limits of error for the assay method.

One hundred cubic cm. of pregnancy urine, containing 75 R.U. were diluted with 900 cc. of urine which had been extracted and boiled as described and the whole was extracted twice with 100 cc. cresol. The dried adsorbate weighed 330 mg. and contained 1 R.U. in 5 to 6 mg., representing a recovery of 55 to 66 R.U.

Cresol extraction has also been used in attempts to concentrate the follicle stimulating hormone from the urine of castrated women and women past the menopause (F.S.U.) but without success. While cresol is apparently very efficient in extracting P.U. it does not take up F.S.U. This demonstrates a striking difference in the properties of the 2 substances, at least as they exist in the 2 types of urine.

8764 P

Action of Crustacean Eye-Stalk Extract on Melanophores of Hypophysectomized Fishes, Amphibians, and Reptiles.*

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The discovery of the crustacean eye-stalk hormone by Perkins¹ and by Koller² was soon followed by announcements of its effects upon the chromatophores of vertebrates. Koller and Meyer,³ Meyer,⁴ Perkins and Kropp,⁵ and Kropp and Perkins⁶ reported

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¹ Perkins, E. B., *J. Exp. Zool.*, 1928, **50**, 71.

² Koller, G., *Zeitschr. f. vergl. physiol.*, 1928, **8**, 601.

³ Koller, G., and Meyer, E., *Biol. Zentralbl.*, 1930, **50**, 579.

⁴ Meyer, E., *Zool. Jahrb., Abt. Allg. Zool. u. Physiol.*, 1931, **49**, 231.

⁵ Perkins, E. B., and Kropp, B., *Bio. Bull.*, 1932, **63**, 108.

⁶ Kropp, B., and Perkins, E. B., *Bio. Bull.*, 1933, **64**, 226.

contraction of fish melanophores following injections of eye-stalk extracts, and Kropp⁵ and Kropp and Perkins⁶ found melanophore expansion in tadpoles following similar injections. These divergent results led the writer to reinvestigate the physiological properties of eye-stalk extract with more rigidly-controlled, experimental animals. Extracts were made from the eye-stalks of *Palaemonetes vulgaris* and injected in various dosages into specimens of fishes, amphibians, and reptiles. The extracts were prepared by macerating eye-stalks in water. The supernatant liquid was boiled, filtered and dried. The dried material was extracted with hot 95% alcohol, the soluble fraction dried, washed with ether, and the ether insoluble material re-extracted with absolute ethanol. The soluble portion was taken up in water and injected.

1. *Amphibian (Rana pipiens)*. Completely hypophysectomized adult frogs, hypophysectomized tadpoles, normal white-adapted frogs and tadpoles, and normal black-adapted frogs and tadpoles constituted the experimental animals. Injection of eye-stalk extracts produced melanophore expansion in the normal white-adapted frogs and tadpoles, and in the hypophysectomized frogs and tadpoles, but had no effect on the melanophores of the black-adapted frogs and tadpoles.

2. *Fish (Ameiurus nebulosus)*. Injection of eye-stalk extracts evoked melanophore expansion in white-adapted hypophysectomized catfishes, and in normal white-adapted catfishes; furthered the expansion of the melanophores of black-adapted hypophysectomized catfishes, and was without effect in normal black-adapted animals.

3. *Reptile (Anolis carolinensis)*. Injected extracts evoked a darkening of normal white-adapted and hypophysectomized Anolis, but produced no change in the coloration of black-adapted specimens.

4. *Erythrophores of the Dace (Chrosomus erythrogaster)*. Injection of eye-stalk extracts was followed by melanophore and erythrophore expansion in the dace.

The eye-stalk extract, it seems, expands the melanophores not only of an amphibian, as has been reported, but also expands those of a fish and a reptile, and has a similar effect upon the erythrophores of the dace. The writer has shown in a previous publication⁷ that the effect of the ablation of the eye-stalks of Portunid crabs of Bermuda upon the black pigment of the carapace was similar to the reported effects of hypophysectomy upon the melanophores of some reptiles, lower fishes, and amphibians. The experiments reported here seem to add further support to the opinion already expressed,

⁷ Abramowitz, A. A., *Proc. Nat. Acad. Sci.*, 1935, **21**, 678.

namely, that the physiological effects of the crustacean pigmentary hormone and those of the chromatophorotropic hormone of the intermediate lobe of the pituitary of vertebrates are identical with respect to the activity of the black pigment cells. This opinion, however, does not imply that the hormones, which at the present time have been obtained only in extract form, are chemically identical. Nevertheless, a comparison of the chemical properties of the eye-stalk hormone (or hormones) described in the papers of Kropp and his associates (including some additional data on the solubility of the active material in various organic solvents made by the writer) with those listed by Zondek⁸ for intermedin reveals several interesting similarities.

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Absorption through the Nasal Mucosa of Tannic-Acid Treated Mice.

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Reports have been given of the absorption of Prussian blue through the nasal mucosa of rabbits¹ and mice.^{2, 3} A study by Olitsky and Cox² of the absorption of the pigment 1 to 3 hours after its instillation in mice previously treated intranasally with tannic-acid shows that absorption at this time is less evident than in untreated mice. Subsequently Rake³ demonstrated that absorption through the nasal mucosa, chiefly the olfactory, is very rapid and has reached its maximum in mice killed at 2 minutes; furthermore, that much of the absorption occurs by way of the olfactory sensory cells. It seemed advisable to study the absorption of Prussian blue from the nasal cavities of tannic-acid treated mice during these early periods.

Nine Swiss mice each received eight preliminary intranasal instillations over 3 days. Each dose, consisting of 0.03 cc. of 0.8 percent tannic-acid in 1% glycerine, was dropped on the outside of

⁸ Zondek, B., *J. Am. Med. Assn.*, 1935, **104**, 637.

¹ Clark, W. E. le G., *Great Britain Rep. Pub. Health and Med. Subj.*, Ministry of Health, 1929, No. 54.

² Olitsky, P. K., and Cox, H. R., *Science*, 1934, **80**, 566.

³ Rake, G., *Proc. Soc. Exp. Biol. and Med.*, 1936, **34**, 369.