

metakentrin; in such a case, male rats can be used and thylakentrin causes only testicular hypertrophy. 2. Prostatic enlargement being an indirect response mediated through the testes is subject to greater variability than would be expected were the effect direct as when prostate stimulation is produced by injected androgen.

Summary. In the assay of pituitary gonadotrophins, the enlargement of the anterior prostate of hypophysectomized immature male rats not only may be used as a specific test for metakentrin (ICSH), but also may be employed satisfactorily in making a quantitative assay of this substance.

12093 P

Deposition of Melanin in Sparrow Bill Following Local Action of Testosterone Propionate in Alcoholic Solution.*

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The bill of the English sparrow is very sensitive to the action of androgens.^{1, 2, 3} Intramuscular injections of androgens dissolved in oil have been shown to induce pigmentation of the bill in the castrate male, or in sexually inactive birds of either sex.^{1, 2, 3} During the breeding season the bill of the male is jet black. As the testis enlarges (during the winter months) previous to mating activity the bill changes progressively from the yellow-color of the juvenal or the sexually inactive adult to the deep black of the sexually active male.^{2, 3, 4} The bill of the female also becomes appreciably darker during the egg-laying season; this response is due to secretion of ovarian androgen and not to estrogenic hormone of the ovary.⁵

The demonstration of the local action of sex hormones indicates

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¹ Keek, W. N., *Proc. Soc. Exp. Biol. and Med.*, 1933, **30**, 1140.

² Keek, W. N., *J. Exp. Zool.*, 1934, **67**, 315.

³ Witschi, E., *Proc. Soc. Exp. Biol. and Med.*, 1936, **33**, 484.

⁴ Kirschbaum, A., and Ringeon, A. R., *Anat. Rec.*, 1936, **64**, 453.

⁵ Pfeiffer, C. A., and Kirschbaum, A., *Yale J. Biol. and Med.*, 1941, **13**, 315.

that they may in some cases act directly on effector cells rather than systemically or through some remote influence, for example, by way of the hypophysis. Such local reactions are growth phenomena; *e.g.*, growth of the mammary gland,⁸⁻⁹ growth of the chick's comb,^{10, 11} and vaginal epithelial growth.¹² To determine whether a phenomenon such as deposition of melanin (in the case of the sparrow bill under the control of androgenic hormone) can be influenced by direct (local) action of the hormone on the cells capable of producing the pigment, testosterone propionate† dissolved in absolute alcohol was applied locally to the bill-producing cells. These are situated at the angle of the bill.

A total of 17 birds (sexually inactive females with yellow bills) were used in these experiments. The hormone solutions were prepared so that a daily dose was contained in one drop of alcohol delivered from a 22-gauge hypodermic needle. In those instances in which the hormone was to act systemically, the solution was applied to the skin of the breast from which the feathers had been plucked. In determining local reaction the lowest dose (2 μ g daily) was applied to the skin at the angle of the bill on the right side, the left side serving as a control.

Table I summarizes the results.

Whenever response was elicited following the application of hormone to the skin of the breast a diffuse deposit of melanin appeared throughout the bill, with greatest concentration at the angle of the bill and along the buccal margin. After local applications for 30 days the pigmented area was confined exclusively to the bill angle where the hormone was applied. In the latter case the pigment appeared first as a narrow black line of maximum intensity; as the pigmented area increased in size following further treatment it was sharply demarcated from the non-pigmented portion of the bill. This is further indication of the strictly local response.

⁶ MacBryde, C. M., *J. A. M. A.*, 1937, **112**, 1043.

⁷ Lyons, W. R., and Sako, Y., *PROC. SOC. EXP. BIOL. AND MED.*, 1940, **44**, 398.

⁸ Speert, H., *Science*, 1940, **92**, 461.

⁹ Gardner, W. U., and Chamberlain, T. L., in press.

¹⁰ Fussgänger, R., *Medicine in Its Chemical Aspect; Reports from the Medicicochemical Research Laboratories of the I. G. Farbenindustrie aktiengesellschaft* 1934, **2**, 185, I. G. Farbenindustrie, AG Leverkusen, Germany.

¹¹ Frank, R. T., and Klempner, E., *PROC. SOC. EXP. BIOL. AND MED.*, 1937, **36**, 763.

¹² Stadler, L. B., and Lyons, W. R., *PROC. SOC. EXP. BIOL. AND MED.*, 1938, **39**, 562.

† The testosterone propionate was kindly furnished by Schering Corporation through the courtesy of Dr. E. Schwenk.

TABLE I.

No. of birds	Treatment	Dose of hormone	Latent period preceding bill pigmentation, days	No. with pigmentation response
4	systemic	8 μ g	5-13	3
5	"	4 μ g	17-19	3*
3	"	2 μ g	25	1†
5	local	2 μ g	4-5	5‡

*Very slight response in 1 animal.

† " " " "

‡ Heavy pigmentation in area at base of bill. No pigmentation on opposite (untreated) side.

Conclusion. Androgenic hormone can act locally to induce deposition of melanin in those cells of the sparrow bill which are capable of producing this pigment.

12094 P

Results of Daily Intravenous Injections of Lanatoside C Upon the Heart Muscles of Dogs.

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Bauer, Hu, Buchner and Lindner¹ demonstrated that the daily intravenous administration of one-third or more of a cat unit* of digitoxin per kilo of body weight produces degenerative changes in the heart muscles of dogs in from 5 to 30 days. The coronary arteries of the hearts of the dogs studied were free of any gross or microscopic pathology, but small infarctions and areas of connective tissue replacement were found in the myocardiums.

In repeating these experiments, we gave lanatoside C,† a crystalline derivative of digitalis lanata, by vein to dogs and also attempted to determine the effects, if any, of moderate and large oral doses both of lanatoside C and of digitalis purpurea.

In July, 1938, 9 dogs were digitalized by vein according to their weight. Thereafter, doses of from one-half to 5 cat units of both

¹ Bauer, F., *Arch. exp. Path. Pharm.*, 1934, **176**, 74; Hu, C., Lien, V., and Li, R., *Chinese Med. J.*, Suppl., 1936, **1**, 31; Büchner, F., *Arch. exp. Path. Pharm.*, 1934, **176**, 59; Lindner, W., *Arch. exp. Path. Pharm.*, 1938, **190**, 210.

* "Cat unit" always refers to the Hatcher-Brody unit.

† Cedilanid, Sandoz Chemical Works, Inc.