liquor space via the choroid plexus – probably by means of an apocrine secretion – cannot be excluded. Biochemical studies on the monoamine content of the cerebrospinal fluid after L-DOPA administration would give a definite answer to the functional significance of the structural phenomena described above.

Acknowledgment. The author is indebted to Professor B. Csillik for his valuable advice and help in the course of these experiments. Ro 4-4602 was kindly supplied by Professor J. Kiss at L. Hoffman-La Roche.

Zusammenfassung. Bei der Ratte lassen sich nach i.v. Verabreichung von L-DOPA zahlreiche, intensiv fluoreszierende Körnchen an der ventrikulären Oberfläche des Plexus chorioideus beobachten. Morphologische Befunde lassen einen aktiven Transport von L-DOPA in den Liquorraum vermuten.

G. JANCSÓ

Department of Anatomy, University Medical School, P.O. Box 512, H-6701 Szeged (Hungary), 11 June 1974.

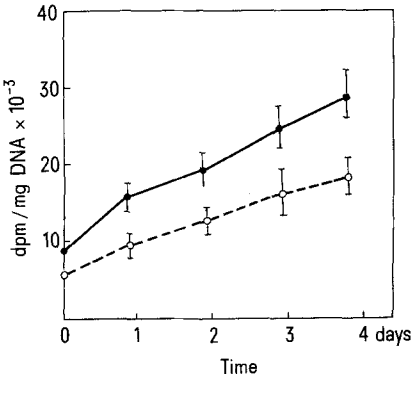
Cell Proliferation in Mouse Kidney by Isoproterenol and the Relationship with the Thyroid Function

Since the adenyl cyclase system is apparently involved in regulating the rate of growth of the salivary glands, it seemed of interest to examine the possibility that the rate of growth of other organs might be influenced by this system. There is general acceptance that isoproterenol stimulates both hyperplasia and hypertrophy in salivary glands[1,2] with an early secretory effect. It is already known that many manifestations of hyperthyroidism are similar to those observed when sympathetic activity is increased, whereas an opposed effect is induced by hypothyroidism[3]. The following experiment was conducted to investigate the effect of isoproterenol on kidney cell proliferation, and the possible relation with thyroid hormone.

Material and methods. Male mice, bred in the animal colony of the Facultad de Farmacia y Bioquimica, were used. The animals were divided into 3 groups: a) control animals, b) injected with 0.5 mCi ^{131}I i.p. 6 weeks before the experiment c) injected with 0.5 mCi ^{131}I and after 6 weeks administered with 15 µg sodium triiodotironine (T_3) i.p. daily for 1 week. Control, ^{131}I and ^{131}I plus T_3 were injected with a total dose of 6 mg of isoproterenol and killed 34 h later. Thymidine-methyl-H^3 was injected i.p. 30 min before killing. Kidneys were removed, weighed and homogenized. DNA was prepared and assayed as described previously[4], and aliquots were counted in a liquid scintillation spectrometer.

Results. In ^{131}I treated animals there was a decrease of organ weight, total DNA and incorporation of thymidine-H^3 (Table, a). After repeated doses of isoproterenol, there was a great difference between the specific activity of control renal and ^{131}I. This divergence appeared to result from an increased sensivity of control kidney and a poor response of hypothyroid mice kidney to different doses of isoproterenol. (Figure). Thyroid hormone has been implicated in the response of catecholamine effects. For this reason, the ability of thyroid hormone to intermediate the effect of isoproterenol-stimulated DNA synthesis was studied in the different groups of controls, ^{131}I or ^{131}I plus T_3 mice. Administration of isoproterenol to control mice significantly increased DNA synthesis compared with normal control (137%). After thyroidectomy, isoproterenol showed no response on kidney DNA synthesis compared with hypothyroid control. When ^{131}I mice were injected with T_3, the effect of β-catecholamines on DNA synthesis and growth response was again similar to the response of control (141%) (Table, b).

Discussion. The effect of thyroid hormone and testosterone on weight and secretory response of rat salivary glands has been described by OHLIN[5]. The similarity observed in the behaviour of thyroid hormone and catecholamines in certain physiological effects, such as increase in systolic pressure, induction of adenyl cyclase synthesis, lipolysis, etc, led to the consideration of a possible interrelation between the thyroid function and the sympathetic function[6,7]. After thyroidectomy, renal growth decreased[8] and columnar and follicles cells became depleted of colloid with a enlarge of thyroid gland after remotion of 1 kidney[9]. These works confirm our evidence that the absence of thyroid hormone affects the hyperplastic response of isoproterenol. From our results, it might be said that the response of β-catecholamines in hypothyroid mice kidney is decreased, and the presence of thyroid hormone (endogenous or exogenous) may increase the sensitivity of receptors and inhibition of their catabolism. Previous studies have indicated a decreased activa-



DNA specific activity in mouse kidney. Mice received 3 mg of isoproterenol per day. Each result is the mean of 6 animals ± S.E. ●—●, control; ○---○, hypothyroid.

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Effect of catecholamines in normal and hypothyroid mice

Treatment	Kidney weight (mg)	Total DNA (μg)	DNA specific activity [a]	Difference (%)
a) Control (10)	398.6 ± 15.2	1419 ± 125	9710 ± 611	
^{131}I (12)	348.7 ± 9.6	1164 ± 98	7340 ± 721	
b) Control (12) (6 mg isoproterenol)	410.8 ± 18.3	1390 ± 142	23.060 ± 2.540	137 [c]
^{131}I (14) (6 mg isoproterenol)	391 ± 12.5	1200 ± 153	12.510 ± 2.431	70 [d]
^{131}I (14) (6 mg isoproterenol + T_3) [b]	429 ± 18.9	1681 ± 203	17.710 ± 2.101	141 [d]

[a] dpm/mg DNA ± S.E. [b] T_3 injected for 1 week. [c] Compared to Control experiment a). [d] Compared to ^{131}I experiment b). Number of animals in parenthesis.

tion of adenyl cyclase and a resultant decrease in cAMP in salivary glands of hypothyroid rats[10]. Therefore, in the present experiments, the effect of isoproterenol stimulated DNA synthesis in hypothyroid mice is consistent with the hypothesis that catecholamine receptors are intermediated by thyroid hormone increasing their sensitivity and that cAMP has a direct effect on isoproterenol-stimulated cell kidney proliferation.

Resumen. En el presente trabajo se estudia el efecto del hipotiroidismo sobre la sintesis de DNA y proliferación celular renal estimuladas por isoproterenol. Se observa que la hormona tiroidea actúa como intermediario de las catecolaminas en el proceso de multiplicación celular. Se sugiere que la hormona tiroidea modula el efecto de catecolaminas aumentando la sensibilidad en el receptor. El aumento de la concentración de cAMP podría estar involucrado en este proceso.

O. L. Catanzaro and Adriana Marzi[11]

Departamento de Ciencias Biologicas, Catedra de Fisiologia, Facultad de Farmacia y Bioquimica, Junin 956, Buenos Aires (Argentina), 9 April 1974.

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Intra-Retinal Absorption of Argon Laser Irradiation in Human and Monkey Retinae

The argon laser is now used extensively in the treatment of a variety of retinal conditions. The small spot size, together with the output reliability of this instrument has allowed treatment of retinal disease adjacent to the macula[1-3]. It has been a consistent observation in this hospital, that argon induced lesions placed within one disc diameter (5°) of the macula show a different damage topography to those placed in more peripheral retina. Using retinal biomicroscopy and fundus photography, two retinal damage planes may be clearly discriminated. Such observations have not been reported for macular lesions produced by other longer wave length lasers[4-6].

We have exposed the maculae of 3 rhesus monkey eyes, and 1 human eye (prior to enucleation for a malignant melanoma of the anterior uvea without posterior retinal detachment) to a series of irradiations from an argon laser. Exposures were placed in groups of 4 within 1°, 2°, 3° and 10° of visual angle from the fovea. In each group lesions were produced by power levels of 50, 100, 200 and 300 mW. A single foveal exposure of 100 mW was given in each eye. All exposures had a 50 μm spot size and a pulse duration of 0.05 sec. All above parameters were as recorded on manufacturers instrumentation. The system used was a Coherent Radiation 800 and exposures were delivered via the integral Zeiss slit lamp system in conjunction with a Goldmann fundus contact lens.

All eyes were removed within a few hours of exposure, and were processed for both light and electron microscopy[7]. Serial sections were cut of each lesion.

Histological preparations confirmed the ophthalmoscopic observations, and showed 2 discreet damage planes, one situated at the pigment epithelium and involving the overlying receptor cells, and a second site in the inner retinal layers (Figures 1 and 2). The degree of damage to the inner retinal layers was inversely related to the distance of the lesion from the fovea. The depth of the plane of this damage also varied with distance from the fovea. At the fovea the damage was situated in the fibre layer of Henle (Figure 3), whilst at distances of 2 and 3 degrees of visual angle, damage was found in the inner nuclear and inner plexiform layers respectively.

We have only examined 1 human eye, but for a given exposure within a 1 degree field of the fovea, greater retinal disturbance was seen in the human eye than in the monkey eyes. (Figures 3a and b).

Both ruby[6] and helium neon irradiations of the macula show a conventional damage distribution centred on the pigment epithelium[7]. Though damage to the inner retina

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