

We have applied the same methods to the retinal rods of the frog and cattle eye⁶ and obtained values of the order of 60,000 for frog [rhodopsin and 40,000 for cattle rhodopsin, which are similar to recently determined experimental values⁷.

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Influence of Thyro-parathyroidectomy on the Haematological Changes Induced by Cortisone in the Rat

THE existence of a functional relationship between the adrenal cortex and the thyroid gland has been reported by many workers¹. In the course of research into the underlying mechanisms responsible for this relationship, the effect of thyro-parathyroidectomy on the blood changes induced by injected cortisone, as indicated by modification of the leucocyte count², has been studied.

Twelve female albino rats of the Italic strain of about 250 gm. weight were used for the investigation. Six animals were adrenalectomized and used as controls: the remaining six were thyro-parathyroidectomized and four days later were adrenalectomized. The operations were performed under light ether anaesthesia. Two days later, the animals of each group received a single dose of cortisone acetate (Lepetit) subcutaneously, the dose being calculated on the basis of 2 mgm. per 100 gm. of body-weight. Blood was taken from the tail immediately before the injection of cortisone and thereafter at 3, 24, 48 and 72 hr. The blood films were stained with May-Grünwald-Giemsa's stain.

In the adrenalectomized controls the total leucocyte count showed a slight fall three hours after the corti-

sone injection, then rose to just above normal and remained at this level from 24 to 72 hr. The mononuclear count showed similar changes. On the other hand, the polymorphonuclear count rose sharply after three hours, then returned to about the normal level after 24 hr.

In the thyro-parathyroidectomized-adrenalectomized rats the total leucocyte count before the cortisone injection was about double that found in the adrenalectomized controls, the mononuclears being increased by about 10,000 and the polymorphonuclears by about 6,500. Three hours after the injection a fall in the total count was recorded and was more marked at 24 hr.; thereafter the total count returned to 'normal' at 48 and 72 hr. after the injection. The mononuclear and polymorphonuclear counts thus showed changes similar to those of the controls, but they were more marked and more prolonged.

The above results show that when adrenalectomy is combined with thyro-parathyroidectomy, the blood changes caused by the injection of cortisone are accentuated and prolonged.

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Plasma Protein as a Precursor of Rat Liver and Hepatoma Protein

WHILE there is little evidence that one protein can be converted into another without complete degradation to amino-acids in the tissues of normal animals (see Askonas *et al.*¹), there is some evidence that such an interconversion of proteins can occur in tumour tissue. Thus Babson and Winnick² showed that the Walker rat-carcinoma incorporated amino-acids from injected plasma protein without complete hydrolysis of the latter to free amino-acids. Recently, Busch and Greene³ have demonstrated a more rapid uptake of amino-acids derived from plasma protein by implanted tumour tissue than by normal tissue. In these experiments the uptake by the tissues of injected free amino-acids served as a control.

In order to determine whether this phenomenon is a characteristic of tumours, the incorporation of amino-acids derived from injected serum albumin into the proteins of liver and hepatoma has been studied in the rat.

A rat (340 gm.) was injected intraperitoneally with 50 μ c. of L-¹⁴C-lysine and killed after 6 hr. The plasma was fractionated by the method of Campbell and Stone⁴ to give a purified preparation of radioactive albumin. A rat (310 gm.) bearing several discrete hepatomas produced by feeding 4-dimethyl-aminoazobenzene was intravenously injected with 150 mgm. of the ¹⁴C-lysine-albumin (equivalent to 0.4 μ c.) in 3 ml. of saline together with 20 μ c. of L-¹⁴C-

Table 1. LEUCOCYTE COUNTS IN SIX ADRENALECTOMIZED AND SIX THYRO-PARATHYROIDECTOMIZED-ADRENALECTOMIZED RATS AFTER INJECTION OF CORTISONE ACETATE

No. of leucocytes (thousands per c.m.m.)	Adrenalectomized controls				Thyro-parathyroidectomized-adrenalectomized animals					
	Before injection of cortisone	Hours after injection of cortisone				Before injection of cortisone	Hours after injection of cortisone			
		3	24	48	72		3	24	48	72
Total number of leucocytes	16	14	17	17	18	32.5	29	27	32	32
Mononuclear count	15	11*	16	15	17	25	15*	15*	21	22.5
Polymorphonuclear count	1.3	3.3*	1.4	1.2	1	8	14*	12*	11*	9.5*

* Difference from values before injection statistically significant (Student's *t* test; $P < 0.05$)