be confirmed. Not a single case of sarcoma was observed in 2 groups of 10 rats after administration of ether extracts of wheat germs in large quantities over a long period (5 times as long as is necessary according to Rowntree). Two groups of 10 rats treated with wheat germ extracts made in other ways and one group of 10 rats treated with crude press oil from wheat germs also failed to develop sarcoma.

10767 P

Correlation Between Secretion of Dyestuffs by the Kidney and Molecular Structure of These Dyes.*

RUDOLF HÖBER AND PRISCILLA M. BRISCOE.

From the Department of Physiology, School of Medicine, University of Pennsylvania, Pa.

Very little is known about the mechanism of the active secretory transport of the kidney. We have tried to attack this problem by investigating the secretory activity of the tubules of the frog kidney as regards dyestuffs, which more or less resemble one another by their molecular configuration. The isolated kidney was perfused with Ringer solution through the aorta under a pressure of about 24 cm of water and with Ringer solution containing 0.0005% of dyestuff through the renal portal vein under a pressure of about 12 cm. About 30 dyestuffs have been tested, all of them being mono-azo-sulfonic acid dyes and all of them being diffusible.

One series of experiments was concerned with 8 naphthalene-azo-naphthalene-disulfonates. The result obtained showed an obvious connection between the structure of the dye and its aptitude for secretory concentration. The main decisive feature is the location of the sulfonate groups in the molecule. If both sulfonates are on the same half of the molecule, as with Fast Violet R, Echtrot B, Acid Violet 6R and Palatine Red A, the injected dye reappears in the secretion at a higher concentration. If one sulfonate is attached to one naphthalene nucleus, the other sulfonate to the other, as

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in Fast Red C, Fast Red E, Serichrome Blue R and Brilliant Ponceau 4R, little or no secretion occurs. As yet, only one exception has been met, Crocein Scarlet 3BX. This dye is secreted although the 2 sulfonate groups are in opposite positions. This exceptional behavior could possibly arise from the particular location of one sulfonate with respect to the azo group. We shall come back to this point later.

In another series of experiments, 13 benzene-azo-naphthalene-sulfonates were used. Eight of them were mono-sulfonates, 5 of them di-sulfonates. In 3 of the mono-sulfonates, Azofuchsin B, Orange GT and Brilliant Orange R, the sulfonate group is attached to the naphthalene ring system, while in 5 of them, Tropaolin 000/2, Tropaolin 000/1, Orange R, Superchrome Violet B and Lithosol Rubine B, it is attached to the benzene ring. All these benzene-azo-naphthalene-mono-sulfonates undergo secretory transport.

Of 5 disulfonates used, 4 were secreted, one was not. These 4 are Ponceau R, Palatine Scarlet A, Azofuchsin I and Azofuchsin II. Here, both sulfonates are located on the naphthalene nucleus. The one non-secreted dye, Azofuchsin G, provided the chance of a crucial experiment in this series of dyestuffs. Since each sulfonate is attached to one half of the molecule, there is no active transport.

So far, we come to the conclusion that, with 20 dyestuffs from a collection of 21 of them, the location of the sulfonate group in the molecule is the controlling factor for physiological behavior. The following explanation could be proposed: the common feature in the configuration of our dyestuffs is that their basal structure is composed of two halves. If sulfonate groups are attached only to one half, the result is a polar-nonpolar configuration, the sulfonated half being hydrophilic, the other half hydrophobic and organophilic. This configuration would enable the molecule to anchor at the interface between cell and surroundings as a first step of penetration. Sulfonate groups, however, fixed on both halves, would prevent the molecule from being attached therein.

Greater difficulties have been encountered in studying the behavior of mono-azo-dyestuffs with 3, 4 or 5 sulfonate groups. We have learned something about some of them, where the sulfonate groups are irregularly disposed around the molecule (Ponceau 6R, I.G.Nr.XIV and Azofuchsin V). The kidney fails to pick them up, presumably because their hydro-affinity is overwhelming. A series of 5 isomers of the naphthalene-azo-naphthalene tri-sulfonates

is particularly interesting. Three of them, Fast Wool Blue R, Fast Wool Blue B and Amaranth were not secreted, while 2 of them, Scarlet RR and Chromotrop 8B were. These 2 are comparable to the disulfonate Crocein Scarlet 3BX, which was mentioned before as outstanding by a special disposition of one sulfonate group, which might be supposed to change the intramolecular forces concerned.

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Effects of Anterior Pituitary and Adrenal Cortical Extracts on Metabolism of Adrenalectomized Rats Fed Glucose.

JANE A. RUSSELL.* (Introduced by C. N. H. Long.)

From the Laboratory of Physiological Chemistry, Yale University School of Medicine, New Haven, Conn.

Whole anterior pituitary extracts given to normal rats fed glucose prevent the usual elevation of R.Q. and increase deposition of muscle glycogen.[1, 2]

Adrenal cortical extracts,[3] corticosterone, and certain adrenotropic anterior pituitary extracts have now also been shown to diminish the rise in R.Q. and to promote glycogen deposition. These findings suggested that part or all of the action of the anterior pituitary extract in fed animals might be mediated through the adrenal cortex. A study has therefore been made of the relative effects of anterior pituitary extract and of adrenal cortical extract (CE) on the disposition of fed glucose in the absence of the adrenal glands.

The experiments were carried out as described previously:[2] young male rats were fasted 18 hours, then fed known amounts of glucose, the respiratory data was obtained during the 4-hour period after feeding, and terminal analyses were made of liver and muscle glycogen, blood glucose and glucose remaining in the gastro-intestinal tracts. Recovery and oxidation of the fed glucose are presented here, calculated as percent of the absorbed amounts. The figures are averages of 9 or 10 experiments in each group.

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