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The destruction of adrenalin by spinal fluid.

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Soon after the discovery of the profound effect of adrenal extract upon blood-pressure the question arose as to the fate of this extract in the blood. The rise of the blood-pressure after an intravenous injection of adrenin passes off in a few minutes and none of the adrenin is found to persist in the blood, no matter how large the injected dose has been. The quite natural explanation of this phenomenon was, that the blood destroys adrenin. But Oliver and Schäfer found that in a mixture of adrenin and blood, even after standing for 22 hours, the adrenin remained unaffected. It has been confirmed since by several investigators, that neither blood nor serum is capable of destroying adrenal extract. I shall not discuss for the present the problem of the fate of adrenin in the body in general. I wish only to report the discovery of the fact that there is at least one body fluid which is capable of destroying adrenin and that is spinal fluid. The observation was made by mixing human spinal fluid with adrenalin. The spinal fluids were obtained in the first place from a number of cases of poliomyelitis of the Rockefeller Hospital and from two cases of tuberculous meningitis, obtained for me by Dr. Flexner. But this destructive action is not specific to these diseases. I found it to be possessed by spinal fluids from cases of resolving pneumonia, gastro-enteritis and eczema, obtained through the kindness of Dr. Wollstein. Evidently it is a physiologic property of normal spinal fluids, although there seems to be a difference in degree of action between some pathologic cases; for instance the spinal fluid from poliomyelitis seems to destroy adrenalin definitely more readily than that from tuberculous meningitis. *This fact might attain a practical significance.* The presence of adrenalin was studied by its dilating action upon the frog's pupil (the so-called Meltzer-Ehrmann reaction) and its action upon blood-pressure.

The tracings speak for themselves. The mixture of adrenalin with spinal fluid in proportion of 1:20 when kept on ice caused a considerable rise of blood-pressure by a dose of 0.5 c.c., while when this mixture was incubated for an hour in the thermostat at 37° C. even 4 times the dose caused no change in blood-pressure.

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Glucuronic acid determination (Tollens) in duodenal obstruction.[1]

By JOHN WILLIAM DRAPER AND FREDERICK W. SCHLUTZ.

While the liver generally plays a subordinate part in the synthesis of glucuronic acid, it would seem from the experiments of Pohl (1), that upon the incorporation of chloral-hydrate or camphor, the conjugation of these substances with glucuronic acid does take place largely in that organ.

We have been interested in seeking a measure of the functional activity of the liver before and after experimental duodenal obstruction. By giving a dog camphor and determining the output of camphor-glucuronic acid, both before and after obstruction, we hoped to measure at least in a relative way any impairment in liver function which may follow this intestinal lesion.

The experiments were carried out on dogs—the operative portion under complete ether anesthesia. The animals were fed for fully a week on an exclusive meat diet in order to free the urine as much as possible from pentoses.

For the glucuronic acid determinations we employed one of the two methods described by C. Tollens (2, 3), viz., distillation of the glucuronic acid lacton with dilute hydrochloric acid, and precipitation of the resulting furfurol with phlorglucin. This method seems open to less objection that most of the other quantitative methods which have been proposed. In the hope of further determining the accuracy of our results, we are now experimenting with the CO_2 method described by Tollens.

[1] Studies from the Laboratory of the Department of Physiology, University of Minnesota, Minneapolis, and from the Laboratory of Surgical Chemistry and Physiology, Rochester, Minnesota.