

were obtained for all glomeruli, are in the hypophysectomized, control and triple pituitary animals respectively as follows: 79, 74, 49; 81, 65, 39; 75, 68, 61; and 76, 67, 51. In 2 of these 4 sets the relatively larger capsular space, in the triple pituitary animal, results from the glomerulus' being contracted and in the other 2 from the great increase in the volume of the capsule. Stasis is probably responsible for the large size of some of the triple pituitary glomeruli. In all cases the generally thickened membrane (up to 8 times normal) balances to some extent the contraction of the capillary tuft in determining the glomerular volume.

These observations show that the renal corpuscle of animals with an increased amount of pituitary tissue have glomeruli that often but not always exhibit contraction, and that there is a clear-cut reduction in the relative size of these glomeruli. In the hypophysectomized individuals the corpuscles show no uniform alteration in glomerular size but a definite tendency toward a reduction in the relative size of the capsular space.

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Parasympathomimetic Effects of Erythrocytes in the Cat.

M. B. BENDER.* (Introduced by Gregory Schwartzman.)

From the Laboratories of the Mount Sinai Hospital, New York.

Using the completely denervated iris of the cat as an indicator of circulating autonomic substances, it was found that constriction of the pupil ensued from 35 to 70 seconds following the intravenous administration of 1.0 cc of whole human blood. The blood of rabbit, guinea pig, mouse, monkey, hog and hemolyzed erythrocytes of cat also produced a constriction of the completely denervated iris of the cat. Identical amounts of blood from dog, sheep and ox were without significant effect on the same preparation. The most conspicuous reactions were obtained with rabbit's blood. Large quantities of dog, ox, or sheep blood sometimes produced a slight and slow constriction of the cat's denervated iris.

Other effects caused by the intravenous injection of blood into the cat were a fall in blood pressure, as shown by Abramson, *et al.*,¹ and

* This investigation has been aided by grants of the Josiah Macy, Jr., Foundation and the Dazian Foundation for Medical Research.

¹ Abramson, D. I., Wasserman, P., and Senior, F. A., *Am. J. Physiol.*, 1938, **124**, 402.

Fuzii,² decrease in heart rate, relaxation of anal and urinary sphincters and hypersalivation, all parasympathomimetic manifestations.

The vaso depressor and miotic properties of the blood were located chiefly in the erythrocytes. Laked red blood cells also exhibited these properties. Intravenous injection of serum never produced a visible change in the iris.

The washed red blood cells caused a pupillary constriction from 35 to 80 seconds after their intravenous injection, whereas the laked erythrocytes produced a much quicker response, the miosis appearing from 12 to 30 seconds after the administration. The rabbit's erythrocytes showed two types of depressor effects on the cat's blood pressure, an early transient drop from 6 to 10 seconds after the injection of the cells and a later prolonged fall from 45 to 70 seconds after the administration. The hemolyzed red blood cells showed only the early depressor effect. The findings concerning the effect upon blood pressure were similar to those of Fuzii.²

Furthermore, the cat's own laked blood produced an early and transient drop in its blood pressure, and a constriction of its completely denervated iris. The smallest quantity of rabbit's blood necessary to produce a constriction of the denervated iris was 0.5 cc of one percent saline suspension of erythrocytes per kilo of body weight of cat. The intact cells were more effective in producing parasympathomimetic reactions than the laked erythrocytes. By centrifuging the hemolyzed red blood cells of the rabbit, it was found that the constrictor factor of the blood was also present in the supernatant red fluid.

Since the iris was completely denervated, the miotic action of the injected bloods mentioned must be due to a chemical agent. The substance had no effect on denervated facial striated muscle or on the radial smooth muscle of the iris denervated by the removal of the superior cervical ganglion. The constriction of the pupil by the intravenous injection of erythrocytes was demonstrated in the eye in which either the oculomotor nerves (preganglionic) or ciliary nerves (post-ganglionic) were acutely sectioned. Atropine sulfate did not hinder the miosis produced by larger quantities of blood. Eserine did not seem to augment the reaction.

Intravenous injections of whole blood, erythrocytes, or laked corpuscles of the species mentioned produced no reaction in the completely denervated iris of the monkey.

I am indebted to Dr. Gregory Schwartzman for his valuable aid and suggestions in this problem.

² Fuzii, K., *Tohoku J. Exp. Med.*, 1939, **35**, 384.