

that is not significantly different from that obtained before any leukocytes reached the bacteria. Therefore phagocytizing leukocytes did not increase the chemotropic effect of the bacteria, presumably because the leukocytes were not injured.

We conclude that in these experiments the source of attraction was the bacteria themselves. The nature of the attracting substance and the possibility that attraction by bacteria may be due in part to substances adsorbed from the culture-medium are now being investigated.

Though in these experiments we obtained chemotropism in the absence of damaged tissue-cells, yet under other conditions, products of tissue-injury are important sources of chemotropism (the literature has been reviewed by Silverman⁴).

Summary. Experiments were designed to show whether bacteria chemotropically attract leukocytes directly, or only indirectly as the result of injuring cells and tissues and causing these to liberate chemotropic substances. Clumps of *Staph. albus* on a glass slide were separated from a suspension of rabbit's leukocytes by a zone of cell-free plasma. Leukocytes moved into the inner ring of plasma and made their way to the bacteria, showing strong positive chemotropism. Values of chemotropism obtained before any leukocytes reached the bacteria represent the reaction to bacteria alone, no tissue-cells being present in the clump of bacteria. After a number of leukocytes reached the bacteria and began to phagocytize them, the value of chemotropism was determined for other leukocytes *en route* to the bacteria. The two values of chemotropism were not significantly different. It is concluded that leukocytes may react chemotropically to substances given off directly by bacteria.

9862

Action of Pentamethylenetetrazol (Metrazol) on Splanchnic Circulation of the Dog.

J. ERNEST NADLER AND A. R. BERGER. (Introduced by A. C. DeGraff.)

From the Department of Therapeutics, New York University College of Medicine.

The analeptic drug pentamethylenetetrazol (Metrazol) used in the treatment of cardiovascular conditions has been reported¹ to

⁴ Silverman, D., *Arch. Path.*, 1938, **25**, 40.

¹ Camp, W. J. R., *J. Pharm. and Exp. Therap.*, 1928, **33**, 81.

produce dilatation of the abdominal capillaries. Because of the extensive clinical use of this drug,² it was felt desirable to restudy its action on the intact splanchnic vascular bed of the dog.

For this study we used 23 female dogs, the average weight being 7 kg. The anesthetic employed was chloralose—80 mg. per kg. injected intravenously. Blood pressure and respiration were recorded in the usual manner. Oncometers were placed on the spleen and small intestine or a loop of ileum was exteriorized and kept in a chamber containing normal saline at body temperature. The mesentery of this loop was transilluminated from below and the vessels were observed through a lens system whose magnifying power could be varied at will.

Following a control period with observation on the blood vessels of an intestinal loop, the drug was injected intravenously as a 10% solution. The dosage ranged from 0.25 cc. to 2.0 cc. per injection and each animal received several injections during a period of 2 to 3 hours. In some instances the same dose was employed throughout a single experiment; in others, the dosage was varied. Almost continuous observations were made of the caliber of the large and small arteries, the arterioles and venules and the large and small veins. Any changes noted were correlated with the normal variation as established before the administration of the drug.

In a series of 12 animals, the predominant effect of the drug on the entire splanchnic circulation was constriction in 3 cases and dilatation in 3 others. There was no significant effect in the remaining 6 dogs.

In another group of 7 dogs, shock was induced by the intravenous injection of peptone (2 cc. per kg. of a 10% solution). Metrazol administered during the period of profound shock apparently produced very minimal splanchnic vasoconstriction with slight transient elevation of blood pressure in 2 dogs, but had no significant effect on the other 5 dogs.

Although the predominant effect in a given animal was constriction or dilatation, there was no uniformity in response in the same animal to several injections. Thus, after the first dose, a large artery might constrict while after the second dose of the same amount, it might dilate. Also constriction of the arteries might be accompanied by venous dilatation, or *vice versa*. At times, an injection of 15 mg. per kg. would produce convulsions and it appeared as though the vascular reactions were associated with the convul-

² *New and Non-Official Remedies*, 1937, 301.

sions. To establish the rôle played by convulsions, strychnine sulphata (0.05 cc. of a 1% solution per kg.) was given to 3 dogs, with results on the splanchnic vascular bed similar to those found in the cases of metrazol with convulsions.

In 4 other dogs the effect of pentamethylenetetrazol on the volume of the spleen and small intestine was ascertained. As shown in Table I, the changes in both viscera were negligible until convulsions appeared.

TABLE I.

	Dose, cc.	Time	Convulsions	Spleen Volume Change
Dog 9B	0.1	9:50	0	0
Wt. 8 kg.	0.1	10:15	0	0
	0.2	10:40	0	0
	0.5	11:00	0	0
	1.0	11:30	++++	Reduced +++
Dog D	0.25	9:55	0	0
Wt. 7 kg.	0.5	10:20	0	0
	1.0	10:40	twitches	0
	1.0	11:15	+++	Reduced +

From this work, it appears that there is no significant or consistent effect of pentamethylenetetrazol on the splanchnic vascular circulation or on the blood pressure of the anesthetized dog. The slight changes observed may well be due to reflexes resulting from increased respiration or muscular activity associated with convulsions rather than to any direct action of the drug on the peripheral vessels.

9863

Pediculosis in Rats Kept on a Riboflavin-Deficient Diet.

PAUL GYÖRGY.

From the Babies and Childrens Hospital, and the Department of Pediatrics, School of Medicine, Western Reserve University, Cleveland.

In the course of experiments on the systematology of the vitamin B₂ complex, about 600 rats kept on diets deficient in riboflavin¹ have been observed and about 2000 rats kept on diets deficient in

¹ György, P., *Nature*, 1934, **133**, 498; *Biochem. J.*, 1935, **29**, 741.