

artificial capillary under near ideal conditions which correspond to our case 3, with $S \sim 0.13$. Comparison of their graph (their Figure 4, top) with the theoretical curve for e shows that the tagged cells do not increase in concentration as fast as expected, and later decrease more rapidly than expected. This suggests that the cells are subject to both a centrifugal displacement near the axis and a centripetal displacement at the wall, in agreement with evidence from other sources⁵.

Résumé. On étudie une solution introduite dans un tuyau rempli de solvant et on distingue entre la concentration statique e et la concentration d'écoulement c du soluté. On présente un groupe d'équations s'appliquant à trois simples cas expérimentaux, qui donnent les rela-

tions de e et de c avec le volume de solution introduite et le volume d'écoulement total.

J. BOURDILLON

Division of Laboratories and Research, New York State Department of Health, Albany (New York USA), February 17, 1964.

⁵ See in particular: M. TAYLOR, *Austr. J. exp. Biol. Med.* **33**, 1 (1955). - G. SEGRÉ and A. SILBERBERG, *J. Fluid Mechanics* **14**, 136 (1962). - G. BUGLIARELLO and J. W. HAYDEN, *Science* **138**, 981 (1962).

The Relationship Between Corticosterone Administration and Cholinesterase Activity in Rats

In an earlier paper¹, one of us proved that the administration of ACTH produced a highly significant increase in cholinesterase activity in normal subjects and also in asthmatic patients; more recently we have observed² that this stimulating effect of the corticosuprarenal hormone was also produced in rats which had received an injection of ACTH.

In order to find out whether the increased cholinesterase activity produced by ACTH is due to the direct action of this hormone or, more probably, its stimulating action on the suprarenal cortex, we administered corticosterone to laboratory rats. We chose this hormone because it is the principal corticosteroid produced by this animal.

For our present study we used female Wistar rats weighing 250 g. Blood was removed by puncture of the jugular vein on three successive occasions in the same animals: (a) under basic conditions, (b) after the intraperitoneal administration of a dose of 40 γ of corticosterone diluted in a saline solution, (c) 9 days after the administration of the hormone.

Blood was extracted between 30 and 180 min following administration of corticosterone, and we allowed a period of seven days between the extraction under basic conditions and the next one.

Cholinesterase activity was determined in plasma, whole blood and blood cells using BIGGS et al.³ colorimetric method.

Increased cholinesterase activity was found in all blood levels but was much more accentuated in the blood cells

(a highly significant difference of $P < 0.001$) than in plasma ($P < 0.05$). The difference was intermediate in whole blood ($P < 0.01$). A similar variation was observed in normal subjects, asthmatic patients and rats injected with ACTH.

There was increased cholinesterase activity in blood cells and whole blood in all the animals studied, these acting as their own controls.

The third determination, carried out nine days after corticosterone administration, showed a decrease in whole blood and blood cell values, which almost reached those found before administration of the corticosuprarenal hormone.

It would appear, therefore, that corticosterone has a stimulating effect on cholinesterase activity in rats.

Résumé. Les auteurs ont déterminé chez des rats l'activité de la cholinestérase dans le plasma, le sang total et les cellules sanguines. Ils ont constaté par des statistiques qu'elle augmente de manière significative après l'administration de corticostérone.

J. R. VACCAREZZA and J. A. WILLSON

Instituto de Biología y Medicina Experimental, Obligado 2490, Buenos Aires (Argentina), and Laboratorio Central del Hospital Muñiz, March 10, 1964.

¹ J. R. VACCAREZZA and L. PELTZ, *Presse Méd.* **68**, 723 (1960).

² J. R. VACCAREZZA and J. A. WILLSON, *Exper.* **20**, 23 (1964).

³ H. G. BIGGS, S. CAREY, and D. B. MORRISON, *Am. J. clin. Path.* **30**, 181 (1958).

	Before corticosterone			After 40 γ of corticosterone			9 days after corticosterone		
	Plasma	Whole blood	Blood cells	Plasma	Whole blood	Blood cells	Plasma	Whole blood	Blood cells
Average U. Ch. activity	78	139	195	87	158	228	89	145	208
Standard deviation	± 6.9	± 9.7	± 13.7	± 11.6	± 9.5	± 17.5	± 10.4	± 15.0	± 25.4
Standard error	± 2.1	± 3.1	± 4.3	$\pm 3.7^a$	$\pm 3.0^b$	$\pm 5.3^c$	± 3.3	± 4.7	± 8.0

^a ($P < 0.05$). ^b ($P < 0.01$). ^c ($P < 0.001$).