

LETTER TO THE EDITOR

Differentiation of Chromaffin Cells

SIR,—Several workers have suggested that there is a dependent relationship of the adrenal cortex to the differentiation of chromaffin cells. Whilst we were also of that opinion for some time,¹ later studies have indicated that methylation of noradrenaline does not require the immediate presence of cortical tissue. For example, the rudimentary suprarenal medulla of the dogfish² and the organs of Zuckerkandl in babies aged more than one year³ contain both adrenaline and noradrenaline, yet both are quite separate from cortical tissue.

In a further series of experiments using 42 dogfish (6 *Mustelis canis* and 36 *Squalus acanthias*), we have divided the chromaffin bodies of groups of 6 fish into 3 parts (see accompanying figure)—(1) those in the anterior segments represented by large chromaffin structures dorsal to the stomach, (2) smaller bodies in the middle segments, and (3) those lying adjacent to the inter-renal body (or rudimentary cortex). Separate extracts were made and tested by chromatographic and biological methods.¹ All 3 extracts contained adrenaline (25 to 30 per cent. of the total pressor amines) in addition to noradrenaline. The anterior bodies which are located quite a distance from the cortex possessed a slightly lower total activity than the posterior ones touching the cortex. No dihydroxyphenylalanine or hydroxytyramine were detected. All 4 substances were absent from concentrated extracts of dogfish kidneys and livers. Traces of noradrenaline and adrenaline however were found in extracts of the inter-renal body, due possibly to incomplete separation of chromaffin tissue, although histologically no such tissue was identified in corresponding sections of the inter-renal body.

FIG. 1. Diagram of the arrangement of the chromaffin tissue (shaded dots) in the dogfish.

S = Stomach, IB = Inter-renal body, K = Kidney. Numbers refer to chromaffin bodies used in making the three extracts.

The evidence suggests that proximity of the cortex is not necessary for the production of adrenaline. It is possible however that a cortical hormonal influence may be one of the factors determining the degree of methylation in these chromaffin structures.

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REFERENCES

1. Shepherd and West, *Brit. J. Pharmacol.*, 1951, **6**, 665.
2. Shepherd and West, *J. Pharm. Pharmacol.*, 1952, **4**, 1008.
3. Hunter, Macgregor Shepherd and West, *J. Physiol.*, 1952, **118**, 11P.