The Catechol Amines in the Suprarenals of Guinea-pigs

SIR.—In 1951[1], we estimated the catechol amines in the suprarenals of guinea-pigs using paper chromatography and biological methods. The mean value of 60 experiments was 127 μg./g. of fresh tissue, of which no more than 3 per cent. was noradrenaline, the remainder being adrenaline. Hydrochloric acid (0·01N) was used for the extraction. Euler, Hamberg and Purkhold[2] had earlier reported values of 293 to 394 μg./g. of which 15 to 31 per cent. was noradrenaline, and Schuler and Heinrich[3] had also found the high value of 400 μg./g. of which 9 to 33 per cent. was noradrenaline. Both of these latter groups of workers used trichloracetic acid for extraction of the glands and the iodine colorimetric method of assay[4]. When we used their technique, erroneous results were obtained, the amine content by the colorimetric method being about twice that found by biological determination, with the proportion of noradrenaline in the mixture much raised. Similar erroneous results were obtained using cortical extracts of human adrenal glands and some extracts of rabbit glands. Since all of these tissues contain a large cortical component, it was suggested that there is a cortical material which may upset the colorimetric estimations of total amines and of the proportion of each present in trichloracetic acid extracts (not hydrochloric acid extracts).

Now Euler and Hokfelt[5] have again used trichloracetic acid for extracting guinea-pig suprarenals and the colorimetric method based on iodine oxidation for estimating the total and relative amounts of adrenaline and noradrenaline. Their total amount of catechol amines has been raised to 450 to 910 μg./g., their noradrenaline-percentage has been lowered to 5 to 16 per cent. and they state that low total catechol figures and high noradrenaline percentages may well occur in deteriorating extracts. In one of their experiments, the result using the colorimetric method was 1·6 times that using the biological technique. All of our extracts were fresh and although we obtained a low total catechol figure (127 μg/g.) our noradrenaline percentage was not high—in fact, it was much lower than any reported for guinea-pig glands, and noradrenaline was never seen in our chromatographic experiments. Selective inactivation of adrenaline in these cases appears to be an unlikely source of error.

We still believe that the colorimetric estimations of trichloracetic acid extracts of guinea-pig glands give too high a noradrenaline value, although generally no discrepancy exists between colorimetric and biological adrenaline values. This results in a raised total amine content, so that we again suggest that the iodine colorimetric method of Euler and Hamberg yields erroneous results for the catechols in trichloracetic acid extracts of these glands. Further work to identify the interfering substance is still in progress.

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