

LETTERS TO THE EDITOR

Assay of Alkaloidal Salts

SIR,—Reimers, Gottlieb and Christensen¹ have described the assay of alkaloidal salts by adsorption of the anions on activated alumina from solution in aqueous alcohol of 90 per cent. v/v or less, followed by elution of the alkaloidal bases with the same solvent, and titration against decinormal acid. Van Os², in recommending the method, stipulates that the alumina should be free from alkali. With several alkaloids we have recently had occasion to assay, however, we have found that the alumina may advantageously be replaced by a mild alkali insoluble in alcohol (90 per cent.), such as anhydrous sodium carbonate, sodium bicarbonate, or fused and powdered borax. The manipulation is in other respects as described by Reimers and associates, though the reaction in our procedure is, of course, not one of adsorption, but simply a neutralization of the anion.

Probably all the assays which are practicable by the alumina method can be reproduced by this procedure. Sodium carbonate tends to give results up to 2 per cent. too high, probably because a small amount may be carried through by the alcohol. With borax, a somewhat slower reaction, up to 30 minutes for the passage of 5 ml. of solution and 30 ml. of washings, should be allowed for. The method gives good results in some cases where the alumina technique failed, e.g., apomorphine hydrochloride on a sodium bicarbonate column gave an assay of 100 per cent. The manipulation is much less laborious than the U.S.P. assay of apomorphine hydrochloride tablets, with which it is chemically comparable.

Brownlee³ describes the assay of galenicals on a column of alumina, which brings about decolorisation in addition to the essential reaction. (It may be incidentally noted that Brownlee, using alcohol of less than 90 per cent. strength, found an appreciable amount of alkali extracted from the alumina.) In such cases, the use of an adsorbent in conjunction with the alkali will clearly be of advantage.

We are indebted to the Government Chemist for permission to communicate these results.

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September 5, 1950.

REFERENCES

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2. Van Os, *J. Pharm. Pharmacol.*, 1949, **1**, 55.
3. Brownlee, *Quart. J. Pharm. Pharmacol.*, 1945, **18**, 163.

Noradrenaline and the Adrenal Glands of the Domestic Fowl

SIR,—Investigations have been carried out in this laboratory to determine the nature of extracts of adrenal glands of various mammals and birds. Most of the mammalian extracts contain a mixture of adrenaline and noradrenaline, with the former amine predominating. One exception to this finding is the rabbit, where noradrenaline is detected very occasionally in minute amounts. We have now completed a series of experiments and find that in extracts from fowls the predominating amine is noradrenaline.

The fowls used in this work ranged from day-olds to birds of about five months, with body weights ranging from 110 g. up to over 2 kg. The

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adrenal glands were removed as quickly as possible after death, weighed and ground up in a mortar with sand and acid. The mixture was filtered

TABLE I.
MEAN VALUES FOR NORADRENALINE AND ADRENALINE CONTENT OF SUPRARENAL GLANDS.

Animal	mg./g. fresh tissue		approximate percentage of adrenaline in the mixture
	adrenaline	noradrenaline	
Rabbit	0.485	traces	100
Rat	1.1	0.13	90
Cattle	2.0	0.6	77
Guinea-pig	0.26	0.08	77
Cat	0.8	0-0.65	55-100
Dog	0.8	0-0.85	49-100
Fowl	2.01	8.09	20

and the filtrate tested for adrenaline and noradrenaline on the following pharmacological preparations; the blood pressure and nictitating membrane of the spinal cat¹, the isolated rectum of the chick², and the isolated ileum of the rabbit. The mean value of extracts from 18 fowls was 8.09 mg. of noradrenaline per g. of fresh tissue of 2.01 mg. of adrenaline per g. (see Table I).

The significance of this finding is not yet clear. It is not that noradrenaline is more active on the blood pressure of the fowl than is adrenaline, for comparisons show that the latter amine is about twice as potent as the former (just as it is in the rabbit where the glands contain only adrenaline). Perhaps it may be that the adrenal medulla is not strongly stimulated very frequently and that the small adrenaline content is sufficient for its immediate needs. Also the methylating process in the fowl may be a slow one. It is certainly of interest that intravenous doses of dibenamine do not reverse the vasoconstrictor action of adrenaline in the fowl³. A similar resistance to adrenergic blockage by ergot was noted many years ago. Another interesting point is that in man the adrenal glands contain about 75 per cent. of adrenaline and 25 per cent. of noradrenaline, and yet in medullary tumours (pheochromocytoma) noradrenaline predominates, with adrenaline only about 10 per cent. of the mixture.

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September 19, 1950.

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3. Thompson and Coon, *Fed. Proc.*, 1948, 7, 259.

The Mode of Linkage of Component α in Vitamin B₁₂

SIR,—A comparison of the absorption spectra of component α (I)^{1,2,3,4}, and vitamin B₁₂ (II) reveals an anomaly. Thus whereas (I) shows a well-resolved fine structure band or "notch" at $\lambda=2850$ Å in dilute acid and $\lambda=2880$ Å