same way as in the main experiment. However, no occurrence of noradrenaline was observed.

These results show that noradrenaline was produced from adrenaline by the enzymic action of the mitochondria, which suggests the possibility of the enzymic demethylation of adrenaline.

Considering the different physiological actions of noradrenaline and adrenaline, this reaction is of physiological interest.

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A Bronchodilator Alkaloid (Vasicinone) from *Adhatoda vasica* Nees

A NEW alkaloid has been isolated by us in the crystalline form from the leaves of *Adhatoda vasica* Nees (Indian Patent No. 62349 of November 21, 1957. Patent application No. 64603 of July 9, 1958). The alkaloid, which has been named vasicinone, has been found to be a much weaker base than vasicine, an alkaloid which is already known to be present in this plant. Elementary analysis gave, C = 65·33, H = 4·93, N = 13·65 per cent. The molecular weight (Rast) was found to be about 210 and the molecular formula $C_{11}H_{10}N_2O_2$. The alkaloid was found to be identical with 2,3-(α-hydroxytrimethylene)-4 quinazolone which had been prepared earlier by the oxidation of vasicine with 30 per cent hydrogen peroxide[1,2].

Vasicinone showed characteristic ultra-violet and infra-red spectra and formed salts as well as crystalline double chlorides of gold and platinum. When chromatographed on filter paper (Whatman No. 1) by capillary ascent method using the organic phase of the solvent system obtained from *n*-butanol : acetic acid : water : 10 : 1 : 5, it gave a light red spot when sprayed with Dragendorff's reagent, R_F value = 0·77–0·79. Vasicine under the same conditions gave an orange-red spot, R_F value 0·57–0·58.

It was found that the crude total alkaloids obtained from the leaves of the plant contained vasicine as the main alkaloid mixed with small quantities of vasicinone ; but the proportion of vasicinone increased by shaking the crude alkaloids in non-polar solvents like chloroform and benzene and exposing the solutions to sunlight, so much so that after a time, the vasicine in the crude total alkaloids was almost completely converted to vasicinone by auto-oxidation. Pure vasicine could similarly be auto-oxidized to vasicinone.

Vasicinone isolated directly from the crude total alkaloids by partition chromatography (over 'Hyflo', *p*H = 1) was predominantly L-vasicinone and that obtained by auto-oxidation was a mixture of L- and DL- forms. Pure L- and DL- forms could be separated from this mixture. Lævo-vasicinone showed $(\alpha)_D^{22°}$ = −100 (0·5 per cent in chloroform) and melted at 200–201° C., DL-vasicinone melted at 212–213° C. and a mixture of L- and DL- forms melted between 200° and 212° C. Both the L- and DL- forms of vasicinone had similar ultra-violet and infra-red spectra and same R_F value on paper chromatograms.

Recently an alkaloid[3,4] has been isolated from *Peganum harmala* Linn. which has the molecular formula $C_{11}H_{10}N_2O_2$ and melting point 203–4° C. We have confirmed these findings by isolating this alkaloid from the crude alkaloids of the plant and established its identity with vasicinone.

The pharmacological actions of vasicinone on the bronchial musculature were studied on the guinea pig tracheal chain, on perfused guinea-pig lung according to the procedure of Bhattacharya and Delaunois[5], and by the overflow method of Konzett and Rössler[6] in intact guinea pigs. Vasicinone had a definite bronchodilator action on the normal lungs and a powerful bronchodilator action against the histamine-induced bronchoconstriction ; but its action was weaker than adrenaline. Lævo-vasicinone was, however, stronger in action than its DL- form. Vasicinone showed a slight and transient fall in the blood pressure of a dog. On isolated perfused hearts of guinea pig and rabbit (Langendorff preparation) vasicinone had a positive inotropic action and increased the flow in the coronary vessels. Both L- and DL- forms of vasicine displayed a bronchoconstrictor action, had a negative inotropic action on the heart and also reduced the flow in the coronary vessels.

The beneficial action of the leaves of *Adhatoda vasica* Nees in respiratory disorders may be attributed to the small quantities of vasicinone, either already present or formed by auto-oxidation of vasicine.

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Interfering Substances in the Determination of Glucosamine Synthesins

PREVIOUS communications have dealt with the enzymatic formation of glucosamine from glucose-6-phosphate and glutamine in cartilage[1,2].

I wished to test the activity of the enzyme involved in glucosamine synthesis in normal and pathological organs. The technique suggested by Castellani *et al.*[1,3] was applied to rat gastric mucosa, aorta, liver, brain, lungs, blood, testis and to rabbit cartilage.

High synthesis of glucosamine was seen when the substrates were incubated with cartilage, liver and gastric mucosa homogenates. To make the determination of activity more specific, the distillation method suggested by Prodi[4], instead of the Schloss method, was used in later experiments. Considerably lower activity values were obtained after distillation, and, moreover, the colour of our samples proved to be due in part to interfering substances, as shown by their absorption spectrum. This fact led me to carry on some hexosamine determination after separation of the interfering substances by means of a cation exchange resin ('Dowex 50'), as suggested by Boas[5].