example, cytochrome *c*, 0·8 μmole/gm. protein). Although the presence of tocopherol in the preparation does not prove that it is involved in the respiratory chain, the actual amount found makes this not unlikely, especially when taken in conjunction with the important experiments of Nason and Lehmann[4]. These authors have shown that added vitamin E activates the reduced diphosphopyridine nucleotide oxidase activity of a particulate preparation from rat skeletal muscle, especially after extraction of the preparation with *iso*-octane. Although Nason and Lehmann were able to activate the enzyme preparation by the lipid present in the *iso*-octane extract, they were unable to detect vitamin E in the extract. We have been able to show the presence of α-tocopherol (or its oxidation products) in *iso*-octane extracts of suspensions of the heart-muscle preparation.

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Note added in proof (June 1). Nason *et al.*[5] have recently shown that the reduced diphosphopyridine nucleotide oxidase system in the rat muscle preparation could be reactivated by high concentrations of crystalline serum albumin, as well as by α-tocopherol. Albumin, previously extracted with *iso*-octane, was ineffective. We have now found that crystalline bovine serum albumin (Armour) contains 0·056 μmole α-tocopherol/gm. protein.

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Pharmacological Action of Rauwolscine

Rauwolscine (kindly supplied by Mrs. A. Chatterjee, University College of Science and Technology, Calcutta), an alkaloid of *Rauwolfia canescens* Linn.[1], has been found to be a potent adrenolytic compound[2,3]. It has further been shown to be α-yohimbine[4]. Yohimbine is an adrenergic blocking alkaloid; but it produces certain other effects, such as stimulation of the central nervous system, local anæsthesia and vague aphrodisiac activity[5], which have precluded its use in clinical practice. No detailed report has appeared so far of any investigation of these properties; we have therefore examined these pharmacological actions of rauwolscine with the following results.

(1) A 2 per cent solution of rauwolscine giving a visible film on the guinea pig cornea produces complete surface anæsthesia starting 5–7 min. after instillation and lasting up to 15–20 min.

(2) 0·25 c.c. of a 0·2–2·0 per cent solution of rauwolscine in normal saline (*p*H 5·2–5·5) produced local anæsthesia in guinea pigs as tested by the method of Bülbring and Wajda[6], and lasts more than 2 hr. This, however, appears to cause local damage to the tissues.

(3) 10–20 mgm./kgm. injected intraperitoneally into guinea pigs produces signs of psychic excitement and erection in the male animals. The animals become highly excitable and restless.

(4) 25 mgm./kgm. injected intraperitoneally in rats lowers the convulsant threshold level of metrazol.

(5) 12–15 mgm./kgm. injected intravenously in rabbits produces sudden clonic convulsions lasting 2–3 min., accompanied by increased respiratory-rate and followed by sexual excitement. When injected intraperitoneally, 20 mgm./kgm. produces no convulsions but other effects; for example, increased motor activity, psychic excitement and increased respiration appear in 5–10 min.

A comparison of the adrenergic blocking activity of rauwolscine with 2-benzyl-imidazoline hydrochloride ('Priscol', Ciba), an agent recommended in the treatment of peripheral vascular diseases on the basis of its adrenolytic activity, was also undertaken. This study was carried out on the isolated guinea pig seminal vesicle following the method described by Stone *et al.*[7]. In concentrations of 1 in 250,000 to 1 in 80,000, the two compounds show nearly equivalent adrenolytic activity; but in higher concentrations, for example, 1 in 60,000 to 1 in 50,000, tolazoline produces only 40–50 per cent adrenolysis whereas rauwolscine produces 81–93 per cent.

These studies thus indicate that in low concentrations rauwolscine possesses marked adrenolytic activity; but in relatively higher dosages it has some of the side-effects of yohimbine. Detailed comparison between rauwolscine and yohimbine and other adrenolytic compounds is now being carried out to determine the clinical potentialities of rauwolscine.

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Assimilation of Berberine by Bacteria

Berberine hydrochloride has been reported to be toxic in weak concentrations against some species of bacteria[1] and some fungi[2]. Recent studies in this laboratory have shown that several species of bacteria assimilate the alkaloid from media provided with suitable nutrients, as well as from extracts of plants containing berberine and chelidoxanthine.

Some of the bacteria tested are sensitive to berberine and do not grow at a concentration of the hydrochloride as low as 0·0025 per cent; others resist and are able to absorb it from media containing as much as 2 per cent. The bacteria, during growth, absorb (assimilate) the pure alkaloid into their protoplasm but do not use it either as a source of carbon or of nitrogen. The evidence for absorption is found by the bright yellow fluorescence of the cells in ultra-violet light, of the same fluorescence as that of the alkaloid, whereas there is only minimal absorption of washed resting cells in saline or nutrient-free media.

The cells, moreover, which have absorbed the alkaloid, when washed and used as a source of