possibilities that N-methyl-anthranilic acid, an N-glycosido-anthranilic acid, or a peptide of anthranilic acid are intermediates in the conversion of anthranilic acid to indole, are now being investigated. The ability of the cell to synthetize peptides of anthranilic acid is demonstrated by the structure of certain alkaloids, for example, of the antimalarial alkaloid in *Hydrangea*[9] and of delsemin in *Delphinium oreophilum*[10].

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Hypotensive Alkaloids of *Veratrum album*

INVESTIGATIONS on alkaloids of *Veratrum viride* necessitated the preparation of a pure specimen of protoveratrine and prompted an examination of the alkaloids which could be isolated from commercial samples of *Veratrum album*. As a result of these studies, we now report the isolation of two new hypotensive ester alkaloids which have been named 'germitetrine' and 'veratetrine'.

Extraction of commercial *Veratrum album* and crystallization of the crude product from ether according to the method described by W. A. Jacobs and L. C. Craig[1] yielded a crystalline fraction which was subjected, without further purification, to a 24-plate Craig counter-current distribution, using benzene and 2 *M* acetate buffer at *p*H 5·5 as the immiscible phases.

From tubes 17–24 of the above Craig distribution, protoveratrine was isolated (m.p. 270–271° with decomp. (cor.); $[\alpha]_D^{25}$, − 35·9° (con. 1·0 in pyridine); $[\alpha]_D^{25}$, − 10·9° (con. 1·0 in chloroform); calculated for $C_{36}H_{61}O_{13}N$; C, 62·28; H, 8·18; found: C, 61·70; H, 7·78 per cent). The material was further identified as protoveratrine by degradation studies. Hydrolysis at room temperature in presence of methanolic sodium hydroxide yielded the alkamine isoprotoverine (isolated and characterized by melting point, analysis and ultra-violet absorption spectrum) and an acidic fraction. The acidic fraction was treated with *p*-phenyl phenacyl bromide, and the resulting mixture separated chromatographically into the *p*-phenyl phenacyl esters of acetic acid, α-methyl butyric acid and methyl ethyl glycollic acid, using methods similar to those described by J. Fried, H. L. White and D. Wintersteiner[2].

The material recovered from tubes 10–15 was crystallized from benzene and yielded germitetrine (m.p. 229–230°; $[\alpha]_D^{25}$, − 74° (con. 1·0 in pyridine); $[\alpha]_D^{25}$, − 12° (con. 1·0 in chloroform)). Analytical data indicate the empirical formula $C_{41}H_{63}O_{14}N$; (calculated, C, 62·00; H, 7·92; N, 1·80; found: C, 62·01, 61·88; H, 7·89, 7·77; N, 1·37, 1·37 per cent); calculated equivalent weight, 794; found, 780. Germitetrine has a characteristic infra-red spectrum which differs from the spectra of protoveratrine and veratetrine. Alkaline hydrolysis of germitetrine and examination of the hydrolysis products by the methods indicated above has yielded the alkamine germine, together with the *p*-phenyl phenacyl esters of acetic acid, α-methyl butyric acid and a third unidentified acid. The *p*-phenyl phenacyl ester of the unidentified acid crystallized from ethanol in white needles (m.p. 163–164° (cor.)). Volatile acid determinations gave 2·8–3·02 equivalent of volatile acid and would indicate that the unidentified acid is non-volatile, since other evidence suggests that germitetrine is a tetra-ester containing two moles of acetic acid, one mole of α-methyl butyric acid and one mole of unidentified acid in combination with one mole of the alkamine germine.

From tubes 0–9 of the Craig distribution, veratetrine was isolated (m.p. 269–270° (dec.); $[\alpha]_D^{26}$, − 32° (con. 1·0 in pyridine); $[\alpha]_D^{27}$, − 6·8° (con. 2·0 in chloroform). The analytical data indicate the empirical formula $C_{43}H_{64}O_{16}N$; (calculated, C, 60·7; H, 7·58; N, 1·6; equiv. weight, 850·5; found, C, 60·1; H, 7·50; N, 1·4 per cent; equiv. weight, 839). Alkaline hydrolysis of veratetrine and examination of the hydrolysis products by the usual methods has afforded isoprotoverine and the *p*-phenyl phenacyl esters of α-methyl butyric acid, acetic acid and an unidentified acid.

This work will be described in greater detail in a forthcoming publication.

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Transport of Substances through the Tentacles of Leaves of *Drosera capensis* L.

IT was found by Darwin[1] that the tentacles of *Drosera* secrete a viscous liquid with their glands, that they curve after stimulation and that they absorb substances from the animals caught. The processes of uptake and transport have been extensively studied in my laboratory[2,4,5]. The marginal tentacles of a cut leaf are put between strips of agar which contain the substance to be absorbed. The tentacles translocate it in their pedicels to the leaf. The curving of the tentacles which would move them out of the agar can be prevented by adding an osmotic substance (sugar or salt) to the agar. This reduces the turgor of the tentacles so that they cannot curve.

The uptake of different substances was determined with simple methods: phosphate colorimetrically and nitrogen by micro-Kjeldahl method. The uptake