

H, 6.84; N, 8.17. The hydrochloride, crystallized from methanol, had m.p. 285~288°. A mixture of authentic δ -yohimbine and our free base showed no depression of the melting point. The ultraviolet spectrum of the free base in ethanol revealed maxima at 226 m μ (log ϵ 4.65) and 282 m μ (log ϵ 3.93) and minimum at 265 m μ (log ϵ 3.83).

Isolation of Reserpine, Ajmaline, and Sarpagine from the Roots of *Rauwolfia indecora* R. E. Woodson

Our investigations on the alkaloids of *Rauwolfia indecora* have led to the isolation of reserpine, ajmaline, and sarpagine.

The weakly basic alkaloidal fraction, obtained from the roots of *Rauwolfia indecora*,* was separated with chloroform into the chloroform-soluble and -insoluble portions.⁴⁾ Chromatography of the chloroform-soluble portion with aluminum oxide yielded two crystalline alkaloids. The earlier eluted one was shown to be identical with reserpine, which was originally found in the root of *Rauwolfia serpentina*¹²⁾ and later in *R. heterophylla*,¹⁾ *R. canescens*,¹³⁾ and *R. vomitoria*,¹⁴⁾ m.p. 260~263°, $[\alpha]_D^{25}$: -117°(CHCl₃), Anal. Calcd. for C₃₃H₄₀O₉N₂: C, 65.11; H, 6.62; N, 4.60. Found: C, 65.14; H, 6.77; N, 4.82. λ_{max}^{EtOH} 217 m μ (log ϵ 4.73), 268(4.23), 296(4.03); λ_{min}^{EtOH} 246 m μ (log ϵ 3.95), 288(4.02). This alkaloid showed no depression on admixture with an authentic specimen isolated from *R. serpentina*.**

The second alkaloid proved to be ajmaline which was originally found in *R. serpentina*¹⁵⁾ and then in *R. heterophylla*.²⁾ It crystallized from methanol in colorless rods, m.p. 157~160°(previous swelling), undepressed on admixture with the material isolated from *R. heterophylla* by the writers. $[\alpha]_D^{25}$: +140°(CHCl₃). Anal. Calcd. for C₂₀H₂₆O₂N₂•CH₃OH: C, 70.36; H, 8.44; N, 7.82. Found: C, 70.10; H, 8.35; N, 7.96. λ_{max}^{EtOH} 248 m μ (log ϵ 3.95), 292(3.44); λ_{min}^{EtOH} 227 m μ (log ϵ 3.48), 272(3.02).

The third alkaloid, which was obtained from the chloroform-insoluble portion of the weakly basic alkaloidal fraction, crystallized from acetone in long peaked plates with m.p. >320°. The identity of this alkaloid with sarpagine⁴⁾(raupine⁵⁾), which was originally found in *R. serpentina* and most recently in *R. heterophylla* by the writers, was established by direct comparison with an authentic specimen.

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- ** The sample kindly provided by CIBA Products Ltd.
- 12) J. M. Müller, E. Schlittler, H. J. Bein: *Experientia*, **8**, 338(1952).
 - 13) M. W. Klohs, M. D. Draper, F. Keller, F. J. Petrcek: *J. Am. Chem. Soc.* **76**, 1381(1954).
 - 14) J. Poisson, A. Le Hir, R. Goutarel, M-M. Janot: *Compt. rend.*, **238**, 1607(1954).
 - 15) S. S. Siddiqui, R. H. Siddiqui: *J. Ind. Chem. Soc.*, **8**, 667(1931); **9**, 539(1932); **12**, 37(1935); L. Van Itallie, A. J. Steenhauer: *Arch. Pharm.*, **270**, 313(1932); F. A. L. Anet, D. Chakravarti, R. Robinson, E. Schlittler: *J. Chem. Soc.*, **1954**, 1242.