

(-)-pachysiphine par comparaison de ses constantes physiques ($[\alpha]_D$, UV, MS, RMN) avec celles publiées ⁴

DISCUSSION

Les graines de *P. retusa* renferment essentiellement, comme les feuilles, tiges et racines de cette espèce³ des alcaloïdes de type *Iboga*. La présence en abondance de (-)-tabersonine dans cet organe de reproduction et de réserve, comme c'est le cas dans beaucoup d'autres graines d'Apocynacées appartenant aux genres *Amsonia*,⁵ *Tabernaemontana*, *Ervatamia*⁶ et *Conopharyngia*⁷ s'accorde avec le rôle prépondérant reconnu à cet alcaloïde dans la filiation biogénétique pouvant conduire à la fois à des alcaloïdes de type aspidospermine et de type ibogaine ^{8,9}

⁴ PATEL, M. B. et POISSON, J. (1966) *Bull. Soc. Chim. Fr.* 427

⁵ JANOT, M.-M., POURRAT, H. et LE MEN, J. (1954) *Bull. Soc. Chim. Fr.* 707

⁶ COLLERA, O., WALLS, F., SANDOVAL, A., GARCIA, F., HERRAN, J. et PEREZAMADOR, M. C. (1962) *Bol. Inst. Quimica Mexico* 14, 3

⁷ DAS, B. C., FELLION, E. et PLAT, M. (1967) *Compt. Rend.* 264, 1765

⁸ SCOTT, A. I. (1970) *Accounts Chem. Res.* 3, 151

⁹ KUTNEY, J. P. (1972) *J. Heterocyclic Chem.* 9 (suppl. S-1)

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ALKALOIDS OF *RAUWOLFIA MACROPHYLLA*

PETER TIMMINS and WILLIAM E. COURT

Postgraduate School of Studies in Pharmacy, University of Bradford,
Bradford BD7 1DP

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Key Word Index—*Rauwolfia macrophylla*, Apocynaceae, root bark, indole alkaloids ajmalicine ajmaline norajmaline reserpine rescinnamine serpentine yohimbine

Plant Rauwolfia macrophylla Stapf *Plant part* Root bark *Source* Yaounde, Cameroun (voucher No. RAU 107-691, deposited with the Collection of Materia Medica and Herbaria, University of Bradford) *Previous work* Reserpine reported ¹

Present work Seven alkaloids were isolated, ajmalicine, ajmaline, norajmaline, rescinnamine, serpentine and yohimbine have not previously been reported from *R. macrophylla*

EXPERIMENTAL

Extraction and fractionation 200 g powdered root bark was extracted 3 × with ammoniated MeOH. The bulked extracts were fractionated into weakly and strongly basic fractions as described earlier ². The resultant

¹ PARIS, R. A., DILLEMANN, G. and CHAUMELLE, P. (1957) *Ann. Pharm. Fr.* 15, 360

² COURT, W. E. (1966) *Can. J. Pharm. Sci.* 1, 76

fractions were further fractionated by solvent extraction³ and the solutions obtained purified by column chromatography, PLC and recrystallization. Ajmalicine, ajmaline, rescinnamine, reserpine, serpentine and yohimbine were identified by co-TLC (4 systems), chromogenic reactions, fluorescence colours, m.p., m.m.p., UV-IR and MS.

Norajmaline base, amorphous yellow grey powder, acetate m.p. 165–170°, UV λ_{max} 244–289 nm, IR $\nu_{\text{max}}^{\text{KBr}}$ 3350, 2950, 1715, 1580 cm^{-1} , MS m/e 312 (M^+), 297, 283, 186, 182, 169, 168, 144, 143, 131, 130 (agrees with published data⁴).

The principal alkaloids of the root are the dihydroindole bases ajmaline and norajmaline and the weak indole bases ajmalicine and reserpine.

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³ HABIB, M. S. (1972) Ph.D. Thesis, University of Bradford.

⁴ MAJUMDAR, S. P., POISSON, J. and POTIER, P. (1973) *Phytochemistry* **12**, 1167.

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ZEATIN IN CANNABIS FRUIT*

HANNA RYBICKA

Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Warsaw, Poland

and

LISABETH ENGELBRECHT

Institut für Biochemie der Pflanzen, Halle (Saale) der Akademie der Wissenschaften, DDR

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Young fruits contain notable amounts of cytokinins which in maize, plums and apple fruits have proved to be zeatin or its derivatives^{1–8} while dihydrozeatin has been found in lupin seeds.⁹ These hormones play a role in the growth of fruits but may also be important in the development of the whole plant. The different development of male and female individuals of dioecious hemp is most striking¹ and therefore, we were interested to characterize the cytokinins in hemp plants.

The water fraction from an anionic ion exchange column showed considerable biological activity in the tobacco assay. After chromatographic separation, two compounds were isolated, *A* and *B*, both of which possessed biological activity. Their chromatographic behaviour was identical with zeatin and zeatin nucleoside respectively. The compounds show the following spectral characteristics: Compound *A* λ_{EtOH} 270 nm (max), 236 nm (min), $\lambda_{0.1 \text{ N HCl}}$ 273 nm (max), 237 nm (min), $\lambda_{0.1 \text{ N NaOH}}$ 221, 274 nm (max) with slight shoulder at 281–284 nm, 243 nm (min). Compound *B* λ_{EtOH} 276 nm (max).

* For Part I see Ref. 1.

¹ MOTHES, K. and ENGELBRECHT, L. (1952) *Flora* **139**, 1.

² MILLER, C. O. (1961) *Proc. Nat. Acad. Sci. U.S.A.* **47**, 170.

³ LITHAM, D. S., SHANNON, J. S. and McDONALD, I. R. C. (1967) *Tetrahedron* **23**, 479.

⁴ LITHAM, D. S. (1966) *Life Sci.* **5**, 551.

⁵ LITHAM, D. S. (1966) *Life Sci.* **5**, 1999.

⁶ LITHAM, D. S. (1963) *Life Sci.* **2**, 152.

⁷ LITHAM, D. S. and WILLIAMS, M. W. (1969) *Physiol. Plant.* **22**, 925.

⁸ LITHAM, D. S. (1967) *Ann. Rev. Plant Physiol.* **18**, 349.

⁹ KOSHIMIZU, K., KISAKI, T., MISUI, T. and MATSUBARA, S. (1967) *Tetrahedron Letters* 1317.