References

[1] Lee, K., Ibuka, T., Kim, S., Hall, I. (1975) J. Med. Chem. 18, 812.
[2] Such selectivity has been observed in diterpene alkaloids: Jiang, Q., Pelletier, S. (1988) Tetrahedron Lett. 29, 1875.
[3] Lee, K., Meck, R., Piantadosi, C. (1973) J. Med. Chem. 16, 299.

Matadine: A New Anhydronium Base from *Strychnos gossweileri*

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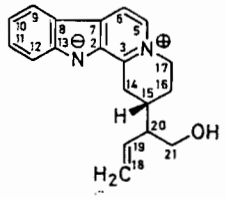
The root bark of *Strychnos gossweileri* Excell. (Loganiaceae) collected by one of us (C.D.) in Matadi (Zaïre) was studied again. A few years ago different alkaloids were identified (1). A recent biological screening showed that some extracts of this new African sample exhibited an antiproliferative activity in our previously described bioassay (2).

For this reason, we decided to undertake a more detailed study of one fraction containing anhydronium bases. We describe here the isolation and structure determination of a new compound to which we have given the trivial name matadine (1), from the above-mentioned sample of the plant.



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The isolation and purification have been performed with chromatographic techniques such as reversed-phase Lobar®, MPLC (Superformance Si60®) column and Fractogel® TSK HW40S separation. Structure determination was based on spectral data: UV, IR, FAB-mass, and mainly on NMR studies (^{1}H, ^{13}C, 2D-COSY, 2D-X-H-Corr, etc.).

On the basis of these considerations, structure 1 is proposed for matadine. The stereochemistry of C-15 is deduced from the biogenetic hypothesis (3) while that at position of H-20 remains undetermined.

Acknowledgements

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References

[1] Angenot, L., Coune, C., Quetin-Leclercq, J., Tavernier, D. (1988) Phytochemistry 27, 595.
[2] Quetin-Leclercq, J., De Pauw-Gillet, M.-Cl., Bassleer, R., Angenot, L. (1985) J. Ethnopharmac. 15, 305.
[3] Brown, R. T. (1983) in: Heterocyclic Compounds, (Saxton, J. E., ed.), p. 114, John Wiley and Sons, New York.

Polyhydroxypyrrolizidine and -indolizidine Alkaloids of Leguminosae

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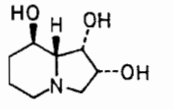
Certain members of the genera *Astragalus* and *Oxytropis*, the toxic "locoweeds" of the Western United States, contain the trihydroxyindolizidine alkaloid swainsonine (1), a potent inhibitor of α-mannosidase (1). The species *A. lentiginosus* has been shown to produce the dihydroxyindolizidines, lentiginosine (2) and 2-epilentiginosine (2). The former is a moderate inhibitor of α-glucosidase whereas the latter has no inhibitory properties. Experiments have shown that swainsonine is derived from pipecolic acid (3) and lentiginosine is probably an intermediate on the biosynthetic pathway.

The Australian legume *Castanospermum australe* produces the tetrahydroxyindolizidine alkaloid castanospermine (3) and the tetrahydroxypyrrolizidine alkaloid australine (4) (4, 5) both of which are inhibitors of α-glucosidase. In addition, several epimers of these two alkaloids have been isolated, possessing glycosidase inhibitory properties to varying degrees.

Recent experiments have led to the isolation of an alkaloid which has been identified by NMR spectroscopy as a novel trihydroxypyrrolidine. The structure of the alkaloid suggests that it may be a biosynthetic intermediate for both the castanospermine and australine groups of alkaloids. The *C. australe* alkaloids may therefore be biosynthesized by an entirely different pathway than swainsonine, being derived from 3-hydroxyproline rather than pipecolic acid.



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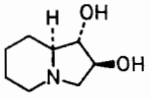

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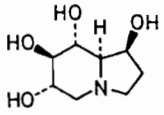

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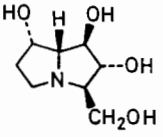

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References

[1] Molyneux, R. J., James, L. F. (1982) Science 216, 190–191.
[2] Pastuszak, I., Molyneux, R. J., Elbein, A. D. (1990) Biochemistry, in press.
[3] Harris, C. M., Campbell, B. C., Molyneux, R. J., Harris, T. M. (1988) Tetrahedron Lett. 29, 4815–4818.
[4] Hohenschutz, L. D., Bell, E. A., Jewess, P. J., Leworthy, D. P., Pryce, R. J., Arnold, E., Clardy, J. (1981) Phytochemistry 20, 811–814.
[5] Molyneux, R. J., Benson, M., Wong, R. Y., Tropea, J. P., Elbein, A. D. (1988) J. Nat. Prod. 51, 1198–1206.