# NEW ALKALOIDS OF Ungernia spiralis

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We have previously [1] reported the isolation from the roots of Ungernia spiralis of two alkaloids with mp 148-149°C and 141°C and the respective compositions $C_{17}H_{17}NO_5$ and $C_{17}H_{19}NO_5$. These bases proved to be new and were called ungspiroline (I) and ungspirolidine (II). We now give information concerning their structures.

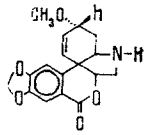
The UV spectrum of (I) has three absorption maxima, at 229, 270, 310 nm (log ε 4.44, 3.82, 3.78) characteristic for alkaloids of the macronine type [2, 3].

IR spectrum of (I): $\lambda_{max}$, $cm^{-1}$: 3300-3340 (>NH), 1715 (>C=O), 1485; 1510, 1615 (aromatic ring).

The NMR spectrum of (I) ($CDCl_3$, $\tau$ scale, JMN 100/100 MHz, internal standard HMDS) showed the following signals (ppm): singlets at 2.40 and 3.10 (aromatic protons at $C_9$ and $C_{12}$), 3.95 (2H, $-O-CH_2O$), 6.52. (3H, $-OCH_3$) and one-proton doublets from two olefinic protons at 3.55 and 4.57 ppm (J = 11Hz) corresponding to protons at $C_2$ and $C_1$.

The mass spectrum of (I) contained, in addition to that of the molecular ion ($M^+$ 315) the peaks of ions with m/e 301, 286, 272, 261, 243, 231, 171, and 56.

The Hess methylation of (I) formed a substance with mp 104-105°C identical with epimacronine [4] (mixed melting point, IR and mass spectra). All the information given shows that ungspiroline is possibly de-N-methylepimacronine and has the structure




The UV spectrum of (II) [$\lambda_{max}^{ethanol}$ 230, 270, 309 nm (log ε 4.30, 3.70, 3.63)] is similar to that of (I). The IR spectrum of (II) was also similar to that of (I) but differs in the "fingerprint" region. In the NMR spectrum of (II) there are singlets at (ppm) 2.53 and 3.07 (aromatic protons at $C_9$ and $C_{12}$), 4.02 (2H, $-O-CH_2O$), and 6.68 (3H, $-OCH_3$). In the mass spectrum of (II) there are the peaks of ions with m/e 317 ($M^+$) 303, 288, 272, 261, 231, 171, and 56.

A comparison of the facts given with those for (I) shows that (II) is possibly dihydroungspiroline. In actual fact, when ungspiroline was reduced by the Adams method a substance identical with the base (II) (in melting point and IR spectrum) was obtained.

## LITERATURE CITED

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