From their physicochemical constants and IR, UV, and PMR spectra, substances (II) and (III) were identified as α-santorin and artemin, respectively [3, 4]. α-Santonin and artemin have not previously been isolated from Artemisia nitrosa.

LITERATURE CITED

1. K. S. Rybalko, Natural Sesquiterpene Lactones [in Russian], Moscow (1978), p. 320.
2. N. H. Fischer, E. J. Oliver, and H. D. Fischer, Fortschr. Chem. Org. Naturst., 38, 47 (1979).
3. H. Yoshioka, T. J. Mabry, and B. N. Timmermann, Sesquiterpene Lactones. Chemistry, NMR and Plant Distribution. University of Tokyo Press (1973), p. 544.
4. L. P. Tolstykh, V. I. Sheichenko, A. I. Ban'kovskii, and K. S. Rybalko, Khim. Prir. Soedin., 384 (1968).
5. V. A. Tarasov, Sh. Z. Kasymov, G. P. Sidyakin, Khim. Prir. Soedin., 745 (1971).

NEW PSEUDOGUAIANOLIDE ARTESOVIN FROM Artemisia szowitsiana

S. V. Serkerov and A. I. Aleskerova

UDC 633.82/88

We have previously [1] reported on the isolation from the epigeal part of Artemisia szowitsiana (Bess.) Grossh. of α-santonin and artemisin. In the present paper we give information on the determination of the structure of a new pseudoguaianolide which has been called artesovin. It was isolated by chromatography on a column containing neutral alumina of the resin obtained by treating the aqueous fraction with chloroform after the isolation of the essential oil from fresh plant material of A. szowitsiana by the steam distillation method. Artesovin has the composition $C_{15}H_{20}O_3$*, mp 142-144°C (from aqueous ethanol). The molecular weight determined mass spectrometrically is 248.

The IR spectrum of artesovin contains absorption bands of the CO group of a γ-lactone (1780 cm^{-1}), the CO of a conjugated ketone group in a 5-membered ring (1713 cm^{-1}), and a double bond (1670 cm^{-1}). The UV spectrum confirmed the presence of a conjugated system: λ_{max} 239 nm (log ε 3.86).

The NMR spectrum of artesovin showed the singlet of an angular methyl group at 1.20 ppm (3 H, $CH_3{-}\overset{|}{\underset{|}{C}}{-}$), doublets of secondary methyl groups at 1.12 ppm (3 H, J ≅ 8 Hz, $CH_3{-}CH{<}$) and 1.24 ppm (3 H, J ≅ 6 Hz, $CH_3{-}CH{<}$). One component of each doublet of the secondary methyl groups was superposed on the singlet of an angular methyl group. A lactone proton appeared in the form of a doublet at 3.80 ppm (1 H, J = 11 Hz), which shows its interaction with one vicinal proton (H-7).

On analyzing the IR, UV, and NMR spectra, it may be concluded that artesovin is based on a pseudoguaiane carbon skeleton. Consequently, it is represented by structure (I) or (II). However, one-proton doublets at 6.03 ppm (J = 6 Hz) and 7.65 ppm (J = 6 Hz) belonging to two olefinic protons (H-4 and H-3, respectively) of a double bond conjugated with a ketone group are similar to the signals of the olefinic protons of anhydrodehydroflexuosin A [2] and anhydrodehydrodihydropylchellin [3], which permits structure (I) to be assigned to artesovin.

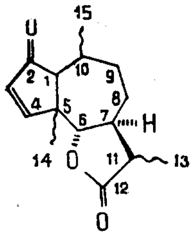
---

*The composition of artesovin was determined on the basis of its IR, UV, and PMR spectra.

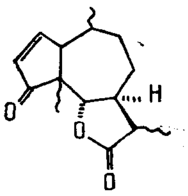
V. L. Komarov Institute of Botany of the Azerbaidzhan SSR Academy of Sciences, Baku.

Translated from Khimiya Prirodnykh Soedinenii, No. 5, pp. 645-646, September-October, 1986. Original article submitted April 1, 1986.

0009-3130/86/2205-0609$12.50



I



II

If artesovin were represented by structure (II), the signals of the olefinic protons should have a different splitting, similar to that of the signals of the olefinic protons of anhydrotetrahydroarnifolin [4], balduilin [5], thurberilin [6], etc. [7].

If IR spectrum was taken on a UR-20 spectrophotometer in paraffin oil, the UV spectrum on a Specord UV-VIS spectrometer in ethanolic solution, the mass spectrum on a Varian CH-8 instrument at 70 eV, and the NMR spectrum on Varian HA-100D instrument in a mixture of $CDCl_3$ and CCl_4. The chemical shifts are given on the δ scale. The internal standard was TMS — 0.

LITERATURE CITED

1. S. V. Serkerov and A. N. Aleskerova, Khim. Prir. Soedin., 397 (1981).
2. W. Herz, P. Jayaraman, and H. Watanabe, J. Am. Chem. Soc., 82, 2276 (1960).
3. W. Herz, K. Ueda, and S. Inayama, Tetrahedron, 19, 483 (1963).
4. K. S. Rybalko, Natural Sesquiterpene Lactones [in Russian], Moscow (1978).
5. W. Herz, A. Romo, J. Romo, and N. Viswanathan, J. Am. Chem. Soc., 85, 19 (1983).
6. W. Herz and M. B. Lakshmikanthan, Tetrahedron, 21, 1711 (1965).
7. E. Dominguez and J. Romo, Tetrahedron, 19, 1415 (1963).