ALKALOIDS OF *PAPAVERACEAE* (XV) [1]. ALKALOIDS OF *PAPAVER PSEUDO-ORIENTALE* POPULATION TAROM

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Abstract

Papaver pseudo-orientale population Tarom was shown to contain two major alkaloids, isothebaine (0.65%), Orientalidine (0.15%) and four minor alkaloids, bracteoline, mecambridine, Or_1 and a novel alkaloid, nor-methyl Or_1.

Introduction

In continuation of chemotaxonomic studies of Iranian wild species of the *Papaveraceae* family [3,4] the alkaloids of *Papaver pseudo-orientale* population Tarom [5] were studied. *Papaver pseudo-orientale* is scattered in Tarom in the north west of Iran at an altitude of between 1500 and 2000 m. The height of the plant is 40-60 cm, and it blooms from mid-June to late July.

Results and Discussion

The following alkaloids were isolated from P. *pseudo-orientale* Tarom through preparative TLC (Table 1, Fig. 1).

The m.p. and spectral data of the above alkaloids were similar to those already reported [7-12]. A novel alkaloid nor-methyl Or_1 is reported for the first time.

Experimental Section

Melting points were taken on a Kofler hot stage apparatus and are uncorrected. The UV spectra were obtained using a Shimadzu UV-160-A. The IR spectra were obtained using a Perkin-Elmer Model 781 or Nicolet FT-IR 550 spectrographs (potassium bromide disks). The ^1H NMR spectra were recorded on a Bruker FT-80 or a Varian Unity 400 plus spectrometer and chemical shifts (δ) are in ppm relative to internal tetramethylsilane. The mass spectra were run on a Varian Model MAT-311 or Finigan TSQ-70 spectrometer at 70 eV.

Key words: Alkaloids of *Papaver pseudo-orientale*; *Papaveraceae*; *Papaver pseudo-orientale*

Plant Material

The capsules of *Papaver pseudo-orientale* population Tarom, collected in July 1993, were air dried in the shade and then at 60° to a constant weight and powdered so that all the material could be passed through a mesh not larger than 0.5 mm.

Extraction Procedure

Starting from 200 g of powdered plant material, the alkaloids were extracted as reported [6] to give 3 g (1.5%) of total crude alkaloids.

Preparative TLC

The alkaloids were separated by preparative TLC (silica gel) using solvent system ethyl acetate-methanol-ammonia-water (12:5:1:0.5).

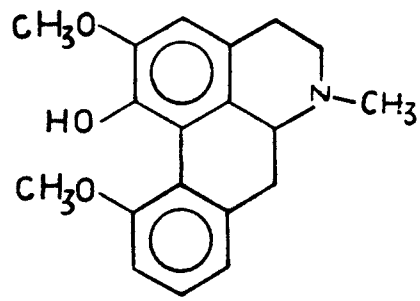
Isothebaine (1)

Crystallized from ethanol (0.65%) m.p. 203-204°

Table 1. Chromatography results of P. *pseudo-orientale*

Alkaloids	R_f*
Nor-methyl Or_1	0.65
Or_1	0.68
Bracteoline	0.7
Isothebaine	0.72
Mecambridine	0.76
Orientalidine	0.87

*Solvent system ethyl acetate-methanol-ammonia-water (12:5:1:0.5)



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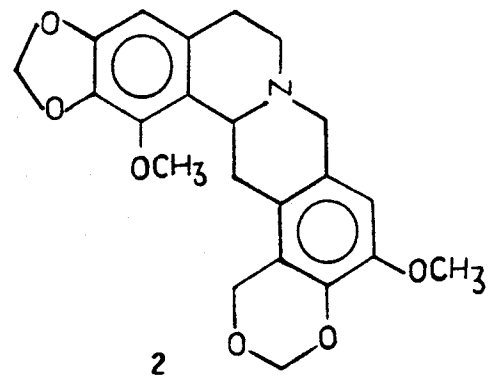

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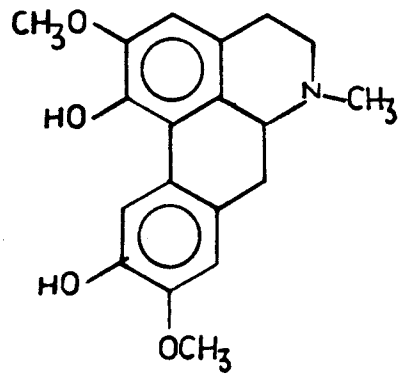

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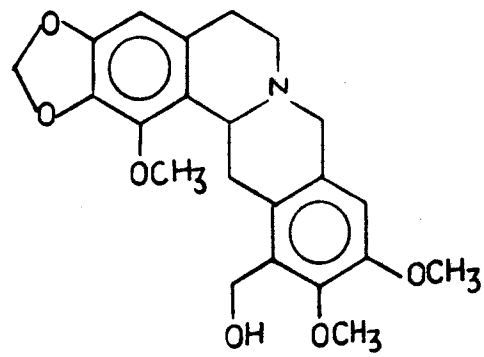

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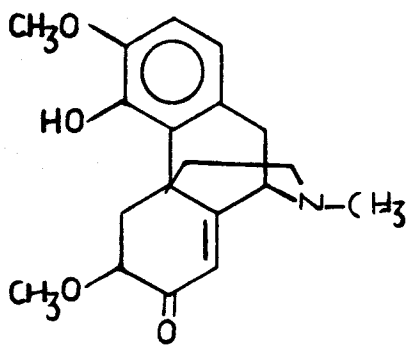

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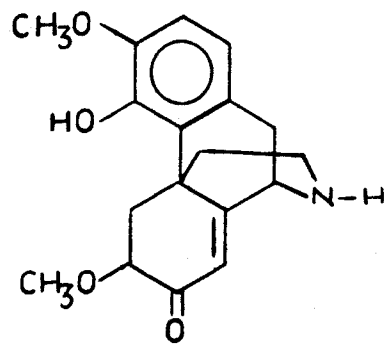

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Figure 1.

[lit. [7] m.p. 203-204°]; mixed melting point with an authentic sample 203-204°.

Orientalidine (2)

Crystallized from ether (0.15%); m.p. 193-194° [lit. [7] m.p. 192-195°]; ^{1}H NMR ($CDCl_3$), 3.86 and 3.98 (2s, each 3H, 2x OMe), 4.68 and 4.85 (2d, each 1H, J=15 Hz, Ar CH_2O), 5.25 (s, 2H, ArO-CH_2O-CH_2-), 5.89 and 5.91 (2d, each 1H, J=1.2 Hz, O.CH_2O), 6.36 and 6.52 ppm (2s, each 1H, aromatic); ms: m/z (%) 397 (M^+, 100), 204 (35), 192 (47), 178 (35), 162 (70) and 133 (23). The m.p. and spectral data were similar to those already reported [7,8].

Bracteoline (3)

Crystallized from ether m.p. 228-230° [lit. [7] m.p. 228-230°]; mixed melting point with an authentic sample 228-230°.

Mecambridine (4)

Crystallized from ethyl acetate m.p. 176-177° [lit. [9] m.p. 179°]; ^{1}H NMR ($CDCl_3$): 3.85 (s, 3H, OMe), 3.86 (s, 3H, OMe), 3.99 (s, 3H, OMe), 4.69 (s, 2H, CH_2-OH), 6.34 (s, 1H, H_4), 6.60 ppm (s, 1H, H_9); ms: m/z (%) 399 (M^+, 100), 206 (70), 204 (66), 194 (64) and 179 (70). The spectral data were similar to those already reported [10, 11].

Or_1 (5)

Crystallized from petroleum ether, m.p. 106-107° [lit. (7) m.p. 106-107°]; UV (methanol): λ_{max} 267 nm; IR (KBr): ν_{max} 1683 cm^{-1} (C=0); ^{1}H NMR ($CDCl_3$); 2.40 (s, 3H, NMe), 3.60 and 3.84 (2s, each 3H, 2x OMe), 5.72 (S, 1H, HC=) and 6.54 ppm (s, 2H, $H_{3,4}$); ms: m/z (%) 329 (M^+, 60), 328 (M-1, 45), 314 (100) and 286 (33). The m.p. and spectral data were similar to those already reported [7,12].

Nor-Methyl Or_1 (6)

As a colorless oil: λ_{max} 267 nm; IR (KBr) ν_{max} 1689 cm^{-1} (C=0); ^{1}H NMR ($CDCl_3$): 3.61 and 3.86 (2S, each 3H, 2x OMe), 5.74 (s, 1H, HC=) and 6.56 ppm (s, 2H, $H_{3,4}$); ms: m/z (%) 315 (M^+, 30), 297 (25), 286 (12), 266 (75) and 255 (100). The spectral data was similar to Or_1. Anal. Calcd. for $C_{18}H_{21}NO_4$: C, 68.57; H, 6.67; N, 4.44. Found: C, 68. 76; H, 6.48; N, 4.25.

Nor-methyl Or_1 is a novel alkaloid which is reported for the first time.

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