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CONSTITUENTS OF *CORYDALIS STEWARTII**

SHUNSUKE NARUTO and HIDEHIKO KANEKO

Research Laboratories, Dainippon Pharmaceutical Co., Ltd., Suita City, Osaka, Japan

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Key Word Index—*Corydalis stewartii*; Papaveraceae; ginnol; protopine; tetrahydrocoptisine; domesticine; isoboldine; coptisine.

Plant. Corydalis stewartii Fedde. *Source.* West Pakistan. The plant was collected and identified by Prof. Qazilbash, Peshawar University where a voucher specimen is deposited. *Uses.* The juice of the plant is used in the treatment of eye diseases.[1] *Previous works.* Protopine,[2] and several alkaloids of unknown structure.[1]

Present work. Ginnol (0·5% yield, m.p., m.m.p.) was isolated from the MeOH extract of the air-dried whole herb (620 g). Alkaloids were purified by means of preparative chromatography (Column and TLC) from the mother liquors of ginnol as described earlier.[3] *Protopine* (0·126%, m.p., m.m.p.). *d-Tetrahydrocoptisine* (0·032%, m.p., m.m.p.). *Domesticine* (0·035%, m.p., IR,[4] UV,[4] MS, NMR), *O*-methylation with CH_2N_2 gave nantenine (m.p., MS,[5] NMR). *Isoboldine* (0·040%, m.p., UV,[6] MS,[7] NMR[7]), *O*-methylation with CH_2N_2 afforded *d*-glaucine (m.p., m.m.p.). *Coptisine*, isolated as iodide (m.p., m.m.p.), reduction with $NaBH_4$–MeOH gave *dl*-tetrahydrocoptisine (m.p., m.m.p.). This is the first record of the occurrence of domesticine and isoboldine in the genus *Corydalis.*

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* Part X in the series "Constituents of *Corydalis* Species". For Part IX see S. NARUTO, K. NAMBA and H. KANEKO, *Phytochem.* **11,** 2642 (1972).

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SANGUINARINE DERIVATIVES FROM *ROMNEYA COULTERI**

F. R. STERMITZ, D. K. KIM and L. TENG

Department of Chemistry, Colorado State University, Fort Collins, CO 80521, U.S.A.

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Key Word Index—*Romneya coulteri*; Papaveraceae; sanguinarine; dihydrosanguinarine.

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We have previously reported[1,2] on the main alkaloids of *Romneya coulteri* var. *trichocalyx* (Eastwood) Jepson and now wish to report that this plant also contains sanguinarine (isolated as the 14-methoxydihydrosanguinarine derivative) and dihydrosanguinarine. Experimental details of isolation and identification are given below.

EXPERIMENTAL

Dried, powdered root (200 g) of *Romneya coulteri* var. *trichocalyx* (Eastwood) Jepson[1] was macerated with 100 ml of 10% Na_2CO_3 solution, and 300 ml of 1:1 *n*-BuOH–benzene was added, and the mixture allowed to stand overnight. It was filtered and the filtrate was extracted 3 × with 100 ml of 1M H_2SO_4. The acidic layers were combined, made basic to pH 9, and extracted with 3 vol. $CHCl_3$. The $CHCl_3$ solutions were combined, dried (Na_2SO_4) and evaporated to yield 1·3 g of crude gummy alkaloids. This residue was dissolved in $CHCl_3$ and chromatographed through a column of Florisil (55 g, 60–100 mesh, Fisher Scientific Co.) prepared in $CHCl_3$. Elution with $CHCl_3$ yielded first, after evaporation, 120 mg of crude syrup which contained mainly two alkaloids by TLC (R_f = 0·52 and 0·65 silica gel with EtOAc). Visualization was with Dragendorff's reagent and UV light. The previously isolated alkaloids (coulteropine, romneine, protopine, and reticuline) were eluted in later fractions.

The 120 mg of crude alkaloids was separated by preparative TLC into two bands which were removed from the silica gel with MeOH and $CHCl_3$. The R_f = 0·65 band material (35 mg) was recrystallized from benzene–EtOH to yield dihydrosanguinarine, m.p. 188–190°, identical with a sample prepared by reduction of authentic sanguinarine. The R_f = 0·52 band (62 mg) was recrystallized from $CHCl_3$–MeOH to yield light tan crystals, m.p. 216–219°, assigned the 14-methoxydihydrosangurinarine structure by comparison with an authentic sample prepared as follows. Commercial 'sanguinarine nitrate' (Aldrich Chemical Co.; a mixture of sanguinarine, chelerythrine, protopine, and other alkaloids) was purified by a chromatographic scheme like that described above for the isolation work to yield pure sanguinarine nitrate. This was dissolved in basic solution, extracted with $CHCl_3$, and the residue crystallized from $CHCl_3$–MeOH to yield light tan crystals of m.p. 216–219°, identical with the isolated compound. *Anal.*: Calc. for $C_{21}H_{18}NO_5$: C, 69·22; H, 4·97; N, 3·84. Found: C, 69·29; H, 4·65; N, 3·54. MS: *m/e* 364 (M+); 332 (base peak = $M^+ - OCH_3$).

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PIPERACEAE

CONSTITUENTS FROM *PIPER BANKSII*

J. W. LODER and R. H. NEARN

Division of Applied Chemistry, CSIRO, Box 4331, Melbourne, Victoria 3001, Australia

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Key Word Index—*Piper banksii*; Piperaceae; elemicin; dillapiole; *N*-isobutyl-*trans*-2, *trans* 4-octadienamide.

Plant. Piper banksii Miq.—Piperaceae. *Source.* Clump Point, near Tully, N. Queensland. Herbarium No. SN 8276. *Previous work.* Related species, *P. novae-hollandiae*.[1]

Leaf and stem. Constituents extracted and separated as before.[1] Steam volatile oil contained elemicin and dillapiole. The only amide detected was *N*-isobutyl-*trans*-2,*trans*-4-octadienamide, but the small plant sample precluded examination of minor components.

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