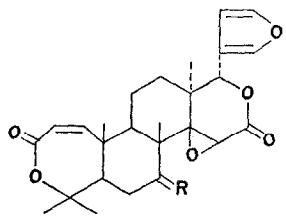
obtained any pure material. The bark has now been examined, it readily gave a crystalline material, m.p. 258–260° which was recognized as the 7α-alcohol[1] (Ia) related to obacunone (Ib). The identity was confirmed by oxidation to obacunone which was identical (NMR,



(Ia) R = H, αOH
(Ib) R = O

IR) with an authentic sample provided by Dr. F. M. Dean. Obacunol and obacunone are limonoid extractives of the Rutaceae, this is the first time a compound of this type has been obtained from a plant belonging to the Meliaceae, although gedunin, a common Meliaceae limonoid, is very similar, lacking only the characteristic oxidative opening of ring *A*.[2]

EXPERIMENTAL

The bark of *Lovoa trichiliodes* from Benin (4·25 kg) was milled and extracted with refluxing light petroleum (b.p. 60–80°). The extract was chromatographed giving a small amount of obacunol. The bark was then extracted with diisopropyl ether. Concentration of the extract and crystallization from MeOH gave obacunol (350 mg) m.p. 256–260° (M^+ 456; δ3·50 m W/2 = 5 Hz. H7β; δ3·85s H-15, characteristic of 7α-OH compound[3]). Oxidation with Jones reagent gave obacunone, identical (NMR, IR) with an authentic sample provided by Dr. F. M. Dean.

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PAPAVERACEAE

ALKALOIDS FROM SEVERAL TUBEROUS *CORYDALIS* SPECIES*

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Key Word Index—*Corydalis* spp.; Papaveraceae; tetrahydroprotoberberine alkaloids; aporphine alkaloids; adlumidine; protopine.

Plant. Corydalis decumbens Pers. (Voucher specimen No. 78C on deposit in this laboratory) was collected in May 1970 at Osaka Prefecture, Japan. *Previous work.* Bulbocapnine, protopine and *d*-tetrahydropalmatine.[1]

* Part IX in the series "Constituents of *Corydalis* Species". For Part VIII see S. NARUTO and H. KANEKO, *Yakugaku Zasshi* in press.

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Present work. The MeOH extract of the tubers (air-dried, 114 g) was dissolved in 10% AcOH. The defatted acidic solution was made alkaline with NH_4OH and extracted with Et_2O. The Et_2O solution was evaporated to give a crude alkaloid mixture. Column chromatography on silica gel gave the following alkaloids; *l-tetrahydropalmatine* (0·006% yield, m.p., m.m.p.); *protopine* (0·044%, m.p., m.m.p.); *bulbocarpnine* (0·140%, m.p., MS[2], NMR[3], UV[4]); and *adlumidine* m.p. 239–241° $[\alpha]_D$ 108° [0·009%, m.p., IR 1750 cm^{-1}, MS *m/e* 367 (M^+), 366, 190; NMR (δ in $CDCl_3$) 2·52 (3H, singlet, N–Me), 5·85 (2H, singlet, $-OCH_2O-$), 6·10 (2H, singlet, $-OCH_2O-$), 6·42–7·12 (4H, aromatic protons); UV λ_{max} nm (log ϵ) 294 (3·84), 324 (3·76)].

Plants. The plant materials collected (voucher specimens on deposit in this laboratory) were; *C. linearíloba* Sieb. et Zucc. in May 1968 at Shiga Prefecture, Japan; *C. linearíloba* Sieb. et Zucc. var. *capillaris* Ohwii in May 1968 at Mie Prefecture; and *C. linearíloba* Sieb. et Zucc. var. *papilligera* Ohwii in May 1967 at Nara Prefecture. *Previous work.* None.

TABLE 1. ALKALOIDS OF *Corydalis* SPECIES

Corydalis species	Alkaloids*						
	A	*B*	*C*	*D*	*E*	*F*	*G*
C. linearíloba	++	++	+	(+)	+	(−)	(−)
C. linearíloba var. capillaris	(++)	(++)	(−)	(+)	(+)	(++)	(−)
C. linearíloba var. papilligera	(++)	(++)	(−)	(+)	(+)	(−)	(++)

* *A*, tetrahydrocolumbamine; *B*, scoulerine; *C*, tetrahydrocoptisine; *D*, tetrahydropalmatine; *E*, protopine; *F*, glaucine; *G*, corydaline. TLC, silica gel G; solvents, cyclohexane–AcOEt–Et_2NH (16:3:1) and MeOH–$CHCl_3$ (1:25), Dragendorff reag., (+) TLC spot; (−) no spot; + isolated; ++ major alkaloid.

Present work. Each crude alkaloid mixture from these three plants was obtained in the same manner described above. The following four alkaloids were isolated from *C. linearíloba*; *l-tetrahydrocolumbamine* (0·140%, m.p., m.m.p.); *l-scoulerine* (0·018%, m.p., m.m.p.); *protopine* (0·003%, m.p., m.m.p.); and *l-tetrahydrocoptisine* (0·001%, m.p., m.m.p.) The alkaloid constituents of two varieties of *C. linearíloba* were comparatively examined by TLC procedures as described earlier.[5,6] The results are shown in Table 1. It is interesting to note from the chemotaxonomical view point that two varieties of *C. linearíloba* contain two major alkaloids, tetrahydrocolumbamine and scoulerine, as well as *C. linearíloba.*

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