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Some New Alkaloids from Chinese *Corydalis Arbigua*, Cham, et Sch. (Yen-Hu-So) Part III.

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In a previous communication^{1, 2} the writer reported the isolation from the tubers of Chinese *corydalis* (Yen-Hu-So) five alkaloids which were provisionally labelled A, B, C, D, and E, until further confirmation. *Corydalis* A is identical with *Corydaline* in all respects and the other 4 are new. A preliminary examination of the physiological effects of *Corydalis* B and C by Drs. H. P. Chu and C. Pak¹ showed that *Corydalis* B has narcotic and local anaesthetic properties and a cardiac augmentor action. *Corydalis* C is apparently a cerebral stimulant. In a second communication,³ the isolation of 3 more alkaloids, *Corydalis* F, G, and H, from the same Chinese *Corydalis* was reported. The first 2 are phenolic bases and the third, obtained only in the form of its hydrobromide, is quaternary. The present work consists of the isolation of another new alkaloid, *Corydalis* I, and the identification of *Corydalis* F and G by means of their mono-methyl ether.

Corydalis I is also a non-phenolic base, melting at 104° C. and having a specific rotation of +112.5° in alcohol. It crystallizes out

¹ Chou, T. Q., PROC. SOC. EXP. BIOL. AND MED., 1927, xxv, 544.

² Chou, T. Q., *Chinese J. Physiol.*, 1928, ii, 203.

³ Chou, T. Q., *Chinese J. Physiol.*, 1929, iii, 69.

from a mixture of alcohol and petroleum ether in the form of large prisms. It forms well crystallized salts; hydrogen oxalate, prisms, m. p. 185° C.; hydrochloride, silky soft needles, m. p. 236° C.; hydrobromide, silky needles; m. p. 241° C. The following preliminary physiological tests of Corydalis I were carried out by Dr. C. Pak; with doses varying from 0.19-0.35 mg. per gm. body weight subcutaneously, Corydalis I, in the form of its hydrobromide, produces in mice and rats a slight depression of the central nervous system (drowsiness) followed within one hour by severe convulsions ending in death. In frogs, the depression is followed by exaggerated reflexes and increased extensor tonus, but no convulsions. The alkaloids, Corypalmine, which is dextro-rotatory, and its mono-methyl ether, d-tetrahydropalmine, were isolated by Späth, Mosettig and Tröthaudl⁴ from Corydalis tuberosa roots grown near Vienna in 1922. Corydalis F, $C_{20}H_{23}O_4N$, is similar to Corypalmine in its molecular formula and general properties, but differs from it in its optical property. Its mono-methyl ether has now been prepared by methylating with nitrosomethylurethane in the presence of sodium hydroxide. It has a molecular formula $C_{21}H_{25}O_4N$ (found: C = 70.78; H = 7.00; $C_{21}H_{25}O_4N$ requires C = 70.98; H = 7.04) a m. p. 140° C. and a specific rotation -275° . It crystallizes out from alcohol in prisms and forms well crystallized salts. The close resemblance between Corydalis F and Corypalmine on one hand and its monomethyl ether with d-tetrahydropalmine on the other leads the writer to think that Corydalis F is probably l-Corypalmine.

Corydalis G, when methylated in a similar way as above, gives rise to the formation of Corydaline. This proves beyond doubt that Corydalis G is Corybulbine, an alkaloid isolated from commercial Corydaline by Freund and Josephi⁵ in 1893, as the latter yields also Corydaline on methylation.

⁴ Späth, E., Mosettig, E., and Tröthaudl, O., *Ber. d. Deutsch. Chem. Gesellsch.*, 1923, lxi, 877.

⁵ Freund and Josephi, *Anualen*, 1893, cclxxvii, 1.