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# A NOTE ON A BITTER PRINCIPLE FROM THE SEEDS OF *SWIETENIA MAHOGANI*

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In a previous communication (this *Journal*, 1951, 28, 207) the isolation of a bitter and a non-bitter principle from *Swietenia macrophylla* (N O. Meliaceae) was described. By a slightly different process of isolation and purification, a different bitter principle has now been isolated from the seeds of *Swietenia mahogani* which morphologically differs from the other species, mainly in the smaller size of its leaflets and of its fruits. No non-bitter principle has been found. Analytical data indicate it to be a non-alkaloidal, non-glucosidal bitter principle of the provisional formula $C_{21}H_{30}O_7$. The presence of an unsaturated lactone group, of a somewhat inactive OH group, and of a methoxy group has been established by the usual tests and analyses. Further work will be carried out at Cuttack when a fresh lot of seeds is available.

The dried, decorticated and powdered seeds yielded a thick yellow oil (33%) to light petroleum. The concentrated chloroform extract of the residue on pouring into 4 to 6 volumes of light petroleum gave a white granular precipitate, which was redissolved and reprecipitated, and was obtained as a yellowish powder (yield 1%). It is insoluble in water, dilute acids and alkalies and in petroleum, but easily soluble in all organic solvents. It is extremely bitter in taste and neutral in reaction. For purification an alcoholic solution of it was heated for ½ hour at 100° after adding $N$-$Ba(OH)_2$ till a distinct yellow colour appeared in the solution. Most of the alcohol was next removed under reduced pressure, the mixture diluted with 3 volumes of water and acidified in the cold with dilute acetic acid. The pale yellow granular solid was filtered, dissolved in warm rectified spirit and slowly poured on the surface of 4 to 5 volumes of water in a beaker. This process was repeated thrice, the bitter principle being thus obtained as a microcrystalline solid, m.p. 127°.

The compound did not give tests for aldehyde, ketone, glucoside or methylenedioxy group. It could not be acetylated under mild conditions. Tests for lactone and methoxyl groups were positive. (Found : C, 64.0 , 64.2 ; H, 7.76, 7.7. $C_{21}H_{30}O_7$ requires C, 63.98 ; H, 7.6 per cent).

M. W. by the Rast method was 389.5 and by cryoscopic method in glacial acetic acid, 385. $C_{21}H_{30}O_7$ requires M. W., 394.

Lactone titration with $N/10$ alcoholic NaOH at 100° for half an hour gave an equivalent weight of 206. The M. W. may be $206 \times 2 = 412$.

From the neutral solution after lactone titration, dilute HCl in the cold gave a hydroxy-acid, m. p. 108°, insoluble in water, but dissolved completely in dilute ammonia. (Found : C, 61.3, 61.5 ; H, 7.5, 7.8. $C_{21}H_{32}O_8$ requires C, 61.16 ; H, 7.76 per cent).

Equivalent weight by titration with $N$-NaOH gave 431.4 ; $C_{21}H_{32}O_8$ requires 412.

Zeisel determination gave a low value of 13.8% of MeO, calc., 15.7%. Obviously

the liberation of MeI was not quantitative. Reaction with phenyl *iso*cyanate gave a white powder, m. p. 139°. (Found : N, 2.55 ; the monophenyl urethane from $C_{21}H_{30}O_7$ requires N, 2.7 per cent).

The dibromide formed in glacial acetic acid melted at 180° (decomp.). (Found : Br, 25.4. $C_{21}H_{30}O_7Br_2$ requires $Br_2$ 28.4 per cent). 0.2808 g. in methyl alcohol absorbed at 30° and 757 mm. 19.8 c.c. or 17.02 c.c. of $H_2$ at N. T. P.

0.1835 g. at 30° and 758 mm. absorbed 12.5 c.c. or 10.75 c.c. at N. T. P. ; values calculated on the basis of one double bond being 15.96 and 10.48 c.c. respectively. The isolated dihydro derivative melted at 118°.

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