

Isolation of Echitamine Chloride from the Root and Root-bark of *Alstonia scholaris* R. Br.

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Chemical studies on different parts other than root and root-bark of *Alstonia scholaris* R. Br. (Fam: *Apocynaceae*), commonly known as *Chhattim*, have been made by several workers¹⁻⁵. Isolation of the alkaloids echitamine¹ and echitamidine² from the stem-bark, picrinine³ from the leaves and a few known triterpenoids⁴ from the stem-bark of this plant have already been reported.

Since it has been observed that different parts of the same plant contain same as well as different constituents, the present authors were interested to undertake a systematic chemical investigation of the root and root-bark of this plant with the hope of isolating some new compounds. Echitamine chloride (I) has been isolated as the major alkaloidal constituent along with few neutral compounds. The complete work on the latter will be reported elsewhere.

The isolation of echitamine as quaternary chloride by treatment of the basic fraction of the plant extract with hydrochloric acid or sodium chloride was reported earlier by several investigators⁵ from the stem-bark of this plant and was also reported from seven other *Alstonia* species (viz., *A. angustiloba* Miq., *A. congensis* Engl., *A. gilletii* DeWild, *A. spatulata* Blume, *A. nerifolia* D. Don, *A. spectabilis* and *A. verticillata* Muell)⁵. The present communication concerns the first report of the occurrence of echitamine chloride (I) as such in nature, being isolated directly from the plant material prior to any treatment with chloride ion at any stage during isolation.

Dried and powdered root (2.5 Kg.) of *Alstonia scholaris* was first extracted with petroleum ether (b.p. 60-80°) for 50 hrs. and then with chloroform for 40 hrs. The petroleum ether extract afforded several neutral compounds which is reported separately. From the chloroform extract a brown solid separated which was collected by filtration. The mother liquor furnished a further quantity of this solid upon concentration (200 ml.) The solid (1.5 g.) was found to be soluble in water and showed two distinct spots in TLC. The main constituent showing spot of lower R_f value was made free from the uncharacterised, amorphous minor constituent and adhering impurities by repeated crystallisations from hot methanol. The pure compound crystallised in heavy needles, m.p. 280-82°, $[\alpha]_D^{25} -58^\circ$ (water), and gave characteristic precipitate of silver chloride with silver nitrate solution. Found: C, 62.66;

1. Hease, *Ann*, 1880, 203, 144.

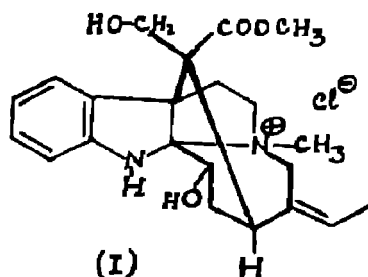
2. Goodson, *J. Chem. Soc.*, 1932, 2636.

3. Chatterjee, Mukherjee and Ray, *Tet. Lett.* 1965, 3633.

4. Chakravarti, Chakravarti and Ghosh, *this Journal*, 1960, 37, 637.

5. Saxton, "The Alkaloids", Ed. Manake, p, 159, Academic Press,

H, 7.19; N, 6.62. Calcd. for $C_{22}H_{29}O_4N_2Cl$: C, 62.78; H, 6.89; N, 6.65%, IR: 3.04 (OH), 3.17 (>NH), 5.79 (ester), 6.3 (aromatic region) and 13.15 μ (*o*-disubstituted benzene), UV: $\lambda_{\text{max}}^{\text{EtOH}}$ 235 (log ϵ , 3.93) 295 m μ (log ϵ , 3.55), unaffected by the addition of strong acid.



The analyses, spectral data, colour reactions and other properties of the alkaloid chloride suggested its identity with echitamine chloride. This was finally substantiated from its mixed m.p. (undepressed) determination with an authentic sample of the alkaloid chloride and from their superimposable IR spectra.

The root-bark of the plant was similarly processed to obtain echitamine chloride in greater yield (0.15 g. from 50 g. of the plant material).

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