Xanthones from Swertia alata

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From the petroleum ether fraction of the aerial parts of *Swertia alata* three bioactive xanthones, viz., 3-methoxy- 1,7,8-trihydroxyxanthone, 1,8-dihydroxy-3,5-dimethoxyxanthone and 1,8-dihydroxy-3,7-dimethoxyxanthones have been isolated and identified by different chemical and spectral methods.

THE alcoholic extracts of the plant of *Seria* genus have shown CNS depressant, mutagenic, antipsychotic, tuberculostatic, choleretic and antidiabetic activities[1-6]. Although *S. alata* Royle Clarke (Gentianaceae) is known for febrifuge, tonic and laxative properties[7], this herb is being used and unknowingly collected as *S. chirayata* Buch Ham. (Gentianaceae) by the traders for the preparation of several Ayurvedic drugs. Taxonomic studies and literature search have revealed that only one chemical investigation report exists in literature[8] wherein bellidifolin, a flavone-C-glycoside and oleanolic acid have been reported from the plant collected from Pakistan[8]. Keeping in view the commercial and pharmaceutical importance of *S. alata* we have undertaken its chemical investigation and 3-methoxy-1,7,8- trihydroxyxanthone, 1,8-dihydroxy-3,5-dimethoxyxanthone and 1,8- dihydroxy-3,7-dimethoxyxanthones have been isolated for the first time and identified from the aerial parts of this plant.

The aerial parts of *S. alata* collected from Kumaon Himalayan region growing at an altitude of 5000 ft were finely powdered and percolated with 80% MeOH, concentrated under vacuum and partitioned with $CHCl_3$ and H_2O (1:1, v/v). Both layers were separated and concentrated. The $CHCl_3$ layer was refractioned with petroleum ether (60-80°), which on Silica gel G column chromatography afforded compound 1,2,3 which have repeatedly purified by RP HPLC using $CHCl_3$: cyclohexane (99:1) as solvent systems.

The yellow crystalline compound, m.p. 220°, mol. Formula $C_{14}H_{10}O_6$, MS m/z M^+ (274), +ve to Iron (III) chloride, KI exposure and 15% H_2SO4 test, fluoresced yellow under UV light. Its UV λ^{MeOH}_{max}, 204, 239, 258, 324 and [^{1}H] NMR ($CDCl_3$/TMS): δ3.90 (3H, s, 1 x OMe), 11.86 and 11.95 (each 1H, chelated OH), 5.46 (1H, non- chelated OH), 6.40 (d, J = 3 Hz, H-2), 6.30 (d, J = 3 Hz, H-4) 6.85 (d, J = 9 Hz, H-5) 7.30 (d J = 9 Hz, H-6) were in accordance[2] to 3-methoxy-1,7,8-trihydroxyxanthone.

Yellow crystals m.p. 189°, mol. Formula $C_{15}H_{12}O_6$, MS m/z M^+ (288) gave all the chemical tests for xanthone as Compound 1. Its UV, IR mass fragmentation pattern and [^{1}H] NMR chemical shifts indicating two methoxyl, two chelated hydroxyl groups and two sets of ortho and meta coupled protons were similar[2] to 1,8-dihydroxy-3,5-dimethoxyxanthone.

Yellow crystals m.p. 190-191°, MS m/z M^+ (288) gave similar test for xanthone as Compound 1 and 2. Its UV, IR mass fragmentation pattern and [^{1}H] NMR were in accordance[2] to 1,8-dihydroxy-3,7-dimethoxyxanthone. Its identity was further confirmed by converting it into its demethylated derivative, 1,3,7,8-tetrahydroxyxanthone, 3a, m.p. 315°, yellow crystals MS m/z M^+ (260).

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Essential oil composition of Moschosma Polystachya (L). Benth

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Moschosma polystachya (Lamiaceae), an oil rich (0.6%) taxa, was found to contain methyl eugenol (39.3%), methyl lisoeugenol (8.4%), limonene (7.4%), 1,8-cineole (5.3%), β-elemene (5.1%), β-caryophyllene (4.8%), β-selinene (3.8%), citronellal (3.5%), geranyl acetate (2.9%), α-humulene (2.4%), isobornyl acetate (1.8%) and δ-cadinene (1.6%) as major components.

MOSCHOSMA polystachya(L) Benth. [syn. *Basilicum polystachyon*(L) Moench], an ethnomedicinal herb of Lamiaceae is used as a sedative[1] and as an antiseptic[2]. The crushed leaves are externally applied as an anodyne for sprains[3]. A decoction of leaves is prescribed for epilepsy, palpitation of heart, neuralgia and convulsions[4]. This plant flourishes well in the sandy dunes of Vandanam in Alapuzha district of Kerala, India. It is identified and herbarized in our institute (CU 14229). So far no chemical report is available on this plant.

The aromatic leaves and flowers were hydrodistilled on a Clevanger apparatus to obtain a pale yellow coloured viscous essential oil (0.6% dry wt.) having a penetrating odour with a fruity topnote and a pungent flavour with a spicy after taste. The