

NOTE**A New Saponin From the Leaves of *Streblus Asper***

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Phytochemical investigation of the leaves of *streblus asper* have resulted in the isolation and identification of a new saponin-3-O-acetyl olean-12-ene-28-oic-O- β -D-gluco pyranosyl-(1-4)-O- β -D-xylo pyranoside.

Key Words: *Streblus asper* moraceac, 3-O-Acetyl olean-12-ene-28-oic-O- β -D-gluco pyranosyl-(1-4)-O- β -D-xylo pyranoside.

Streblus asper (Lour)^{1,2}: belongs to the natural order Moraceac and it is a medicinal plant, which is distributed throughout the most of the part of India. 3 kg air dried, powered and defatted leaves extracted with rectified spirit and concentrated under reduced pressure to get a brown viscous mass.

The brown viscous mass was extracted with benzene, chloroform, acetone and the residue dissolved in methanol. The methanol soluble part was concentrated under reduced pressure and excess of solvent ether was added to it to precipitate saponin(s) which was separated by decantation. On TLC examination it showed two spots and therefore, subjected to column chromatography over silica gel using chloroform: methanol (1:1) as eluants. Since the eluates has some R_f value so combined and solvent removed. The residue showed a single spot on TLC examination thereby confirming its homogeneity. The compound was crystallized from methanol and analyzed for m.f. C₃₄H₆₈O₁₂ M⁺ = 776 (by mass spectroscopy) and responded to positive test for glycoside and a characteristic reactions of triterpenoid³⁻⁵.

The compound was soluble in alcohol, readily soluble in pyridine giving a pale yellow viscous solution, insoluble in solvent ether and sparingly soluble in acetone and ethyl acetate. It did not show any absorption beyond 200 nm and it has IR (KBr, ν_{\max} , cm⁻¹): 3030-3025, 2900-2850, 1730, 1240, 1718, 1666-1650, 1392, 1381, 1870, 1247, 800. Signals in the NMR (¹H TMS, CdCl₂) = 0.75 (3H), 0.30 (3H), 0.97 (6H), 1.00 (6H), 2.05 (3H), 3.60 (3H), 5.28 (1H).

The saponin when hydrolyzed with 7 % ethanolic sulphuric acid yielded the saponin and the sugar moieties identified as D-xylose and D-glucose (confirmed). The saponin analyzed for m.f. C₃₂H₅₀O₄ m.p. 255 °C M⁺ 498 and responded to characteristic colour reactions of triterpenoid⁶⁻⁸. It had KBr, λ_{\max} at 208 nm and IR (KBr, ν_{\max} , cm⁻¹): 3030-3025, 2900, 1730, 1240, 1718, 1666-1650, 1372, 1247, 800.

The saponin formed a methyl ester C₃₃H₅₂O₄ m.p. 221 °C with diazomethane indicating the presence of a carboxylic group, which was further confirmed by the

absorption band at 1717 cm^{-1} (ester carboxyl) in the IR spectrum of its methyl ester. The molecular weight ($M^+ = 512$) of the methyl ester confirmed, the presence of only one $-\text{COOH}$ group in the sapogenin. The methyl ester of the sapogenin could not be saponified by methanolic KOH thus indicating that $-\text{COOH}$ group is hindered and therefore, must be attached at C-17.

It gave positive colour with tetranitromethane indicating the presence of olefinic double bond in the ring. A peak in the IR spectrum of the sapogenin at 1730 and 1240 cm^{-1} showed the presence of acetyl group in the sapogenin. The sapogenin gave oleanolic acid ($\text{C}_{30}\text{H}_{48}\text{O}_3$) on alkaline hydrolysis which responded to positive zimmermann test showing the secondary $-\text{OH}$ group is present at position C-3 and therefore, the acetyl group at position C-3. The sapogenin was identified as 3-O-acetyl oleanolic acid by m.p., m.m.p. and CO-TLC with an authentic sample.

The hydrolyzate on paper chromatographic examination showed the presence of D-xylose and D-glucose. Quantitative hydrolysis of the sapogenin yielded 60 % of sapogenin and 40 % sugar indicating the presence of D-xylose and D-glucose in equimolar proportions.

The saponin on hydrolysis showing the sugar moieties must be attached at position C-17⁹. The enzymatic hydrolysis¹⁰ of the saponin confirmed β -linkage between genin and D-xylose and β -linkage between the two sugar moieties.

On the basis of above facts the structure of the saponin assigned as 3-O-acetyl-olean-12-ene-28-oic-O- β -D-glucopyranosyl-(1-4)-O- β -D-xylopyranoside.

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