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A FLAVANONE GLYCOSIDE FROM SEEDS OF *SAPIUM SEBIFERUM*

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Key Word Index—*Sapium sebiferum*; Euphorbiaceae; flavanone glycoside; eriodictyol 5-*O*-methyl ether 7-*O*-β-D-xylopyranosyl-β-D-arabinopyranoside.

Abstract—The isolation and identification of a new glycoside, eriodictyol 5-*O*-methyl ether 7-*O*-β-D-xylopyranosyl-β-D-arabinopyranoside, from seeds of *Sapium sebiferum* is reported.

A phytochemical examination of the seed of *Sapium sebiferum* Roxb. was undertaken because little work appears to have been carried out on this plant [1, 2] despite its medicinal importance in India [3, 4]. During the present study a new flavanone glycoside was isolated.

This compound (**1**) gave a positive Molisch test for a glycoside and UV data [λ_{max}^{MeOH} nm 288, 330 (sh) + $AlCl_3$ + 290, 335 (sh) + NaOAc 290, 322 (sh)] showed it was a 5,7-disubstituted flavanone [5]. **1** on acid hydrolysis (7% $EtOH-H_2SO_4$) yielded an aglycone, xylose and arabinose. The aglycone crystallized as yellow needles (EtOH), mp 111°(d) (C, 63.40, H, 4.68; $C_{16}H_{14}O_6$ requires: C, 63.57, H, 4.63%) (M^+ 302). Alkaline degradation (50% KOH) of the aglycone yielded phloroglucinol (mp and co-TLC) and protocatechuic acid (mp and co-TLC) which showed the presence of hydroxyl groups at C-7, C-3′ and C-4′, and a methyl group at C-5. The UV data [λ_{max}^{MeOH} nm 290, 330 (sh) + $AlCl_3$ 288, 335 (sh) + NaOAc 325, 335 (sh)] showed the presence of a free hydroxyl at C-7 and a methoxyl at C-5. The ^{1}H NMR spectrum of the aglycone showed shifts at (90 Hz) δ 7.25 (*d*, C-6′ and C-2′), 7.20 (C-5′), 6.30 (*d*, C-6 or C-8) 6.00 (*s*, 3 H of 3-OH), 3.80 (5-OMe), 2.75 (H-1 and H-2). MS (*m/z*) 302 (M^+), 287 (M^+ −15), 259 (M^+ −43), 192 (M^+ − 110) and 109 (M^+ − 193). The aglycone on demethylation (48% HBr–HOAc) afforded eriodictyol [6] (mmp, co-TLC, UV, IR, ^{1}NMR). Hence the aglycone was identified as eriodictyol 5-*O*-methyl ether [7] (co-chromatography and mmp with an authentic sample).

The periodate oxidation of the glycoside consumed 3 mol of periodate with the liberation of 1 mol of formic acid. This indicated the presence of a dissaccharide having both units in the pyranose form. Partial hydrolysis with 2% sulphuric acid gave first xylose and then arabinose suggesting the terminal position of xylose in the sugar moiety and that arabinose is linked with the aglycone at position 7. The completely methylated glycoside on acid hydrolysis yielded 2,3-di-*O*-methylarabinose (phenylhydrazone and periodate oxidation) and 2,3,4-tri-*O*-methylxylose (mmp and co-chromatography with an authentic sample) indicating that the xylose is joined to the arabinose by a 1 → 4-linkage. Enzymic hydrolysis showed a β-linkage between the two sugars and between the aglycone and arabinose. Thus the new glycoside is eriodictyol 5-*O*-methyl ether 7-*O*-β-D-xylopyranosyl-β-D-arabinopyranoside.

EXPERIMENTAL

Air-dried and powdered seeds (2 kg) of *Sapium sebiferum* were obtained from the Pratap Nursery and Seeds Stores, Dehradun (U.P.), India and identified by the Ecological Laboratory, Department of Botany, University of Sagar. The seeds were extracted with EtOH for 20 days. The extract (2.5 l.) was concd to 100 ml and poured into dist. H_2O (500 ml) with continuous stirring. The H_2O-soluble portion was successively extracted with petrol, C_6H_6, Et_2O and EtOAc. The EtOAc extract afforded **1** which was purified on a column of magnisol (EtOAc satd with H_2O), followed by cryst. as yellow needles from petrol–Me_2CO, mp 69°, R_f 0.67 ($CHCl_3$–MeOH, 1:2) and 0.98 (BAW, 4:1:5), yield 0.029 g.

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REFERENCES

1. Bhatt, S. K. and Saxena, V. K. (1979) *Indian Drugs and Pharmaceuticals Industry* (in press).
2. Brayant, R., Hall, A. and Meinne, W. W. (1948) *J. Am. Oil Chem. Soc.* **25**, 418.
3. Chopra, R. N., Nayar, S. L. and Chopra, I. C. (1956) *Glossary of Indian Medicinal Plants*, p. 221. CSIR, New Delhi.
4. Kirtikar, K. R. and Basu, B. D. (1935) *Indian Medicinal Plants* Vol. III, p. 2284. Lalit Mohan Basu, Allahabad.
5. Mabry, T. J., Markham, K. R. and Thomas, M. B. (1970) *The Systematic Identification of Flavanoids*. Springer, New York.
6. Chauhan, J. S., Sultan, M. and Srivastava, S. K. (1977) *Planta Med.* **32**, 217.
7. Srivastava, S. K. and Srivastava, S. D. (1977) *Curr. Sci.* **48**, 430.