LETTERS TO THE EDITOR

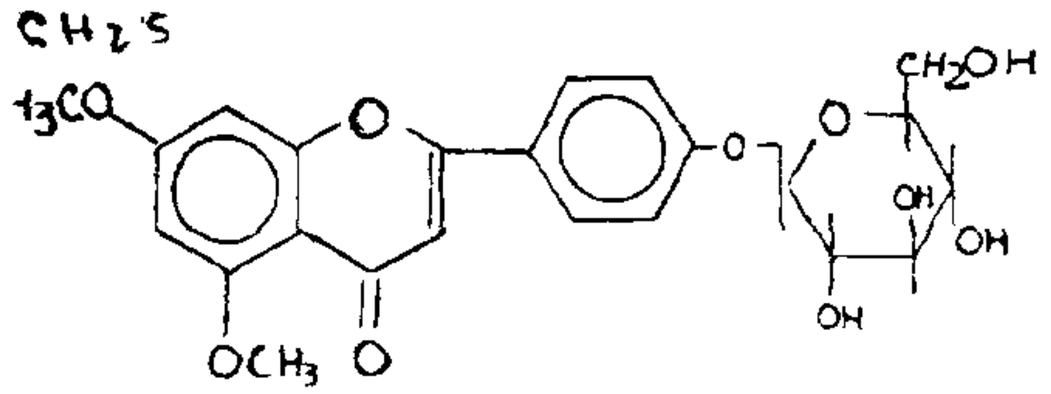
5, 7-DIMETHYL APIGENIN 4′-O-β-D-GLUCOPYRANOSIDE FROM *SACCHARUM OFFICINARUM* LEAVES

A LARGE number of steroids have been reported to be present in the leaves of *Saccharum officinarum* by Sukhdev *et al.*[1]. During the present work a flavone glycoside has been isolated and studied. Air dried leaves (5 kg) were extracted with boiling ethanol. The concentrated extract was subsequently fractionated into (i) petroleum ether soluble, (ii) ether soluble and (iii) ethyl acetate soluble fractions. Petroleum ether fraction contained only steroids. The ether and ethyl acetate fractions were found to contain the same substance, as shown by mixed thin layer and paper chromatography. These fractions were combined, concentrated and excess of petroleum ether was added, when a cream coloured solid precipitated out. It was crystallised from ethyl acetate-petroleum ether mixture as minute prisms, m.p. 190–92° (decomp.), analysed for $C_{23}H_{24}O_{10}$, yield 0·025%.

Positive Molisch test and negative test with Fehling solution and aniline hydrogen phthalate indicated its glycosidic nature. Acid hydrolysis with 7% sulphuric acid gave D(+)-glucose and a pale yellow aglycone, $C_{17}H_{14}O_5$, m.p. 292°.

The aglycone responded to all the characteristic colour reactions for flavonoids. Its λ_{max} at 325 nm (band I) and 264 nm (band II) are characteristic of flavones. It analysed for two methoxyl groups (Zeisel method), supported by the IR peaks at 1,170 and 2,850 cm^{-1}. The aglycone formed a mono acetate showing thereby the presence of one free hydroxyl group. It gave neither any positive colour nor any fluorescence with oxalic acid in presence of boric acid[2,3], indicating thereby the absence of free 5–OH group. This was also in conformity with its UV spectrum taken in presence of aluminium chloride[4], when no bathochromic shift of either band was observed. Negative test with valillin–HCl indicated the absence of free 5,7–dihydroxy groups. No bathochromic shift on addition of fused solium acetate suggested[5] either absence or a substituted hydroxyl at position 7. A large bathochromic shift of 53 nm of band I on addition of 0·002 M sodium ethoxide fixed the position for free hydroxyl group[6] at 4′. Alkali fission of the aglydone yielded *p*–hydrxy benzoic acid and dimethyl phloroglucinol, confirming the presence of free hydroxyl at 4′ position and the two methoxyl groups at 5 and 7 positions. The methyl ether of the aglycone also gave anisic acid on neutral permaganate oxidation. Therefore, the aglycone was identified as 5, 7-dimethyl apigenin.

The only alternative for sugar linkage in the aglycone is at position 4′. The glycoside could be hydrolysed with emulsin, indicating the nature of the glycosidic linkage as β. The diazomethane methylated glycoside on periodate oxidation consumed two moles of periodate per mole of the glycoside methyl ether with liberation of one mole of formic acid. This result corresponds to pyranose form of the ring in glucose. Therefore, the glycoside is 4′–O–β–D–glucopyranoside of 5, 7–dimethyl apigenin (I). The same glycoside has earlier been reported in the peelings of sugarcane[7,8].



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