

HEVEAFLAVONE - A NEW BIFLAVONOID FROM HEVEA BRASELIENSIS

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The rubber tree (Hevea brasiliensis: family, Euphorbeacea) is of great economic importance. Earlier work on this species has shown the presence of quebrachitol (1), linamarin (2), indoleacetic acid (3) and betaines (4) from various parts of the tree, but not much is known about its phenolic constituents. The present work was undertaken with a view to study these.

Alcoholic extract concentrate of fresh leaves collected from Kerala was diluted with water and extracted successively with pet. ether, ether and ethyl acetate. The final aqueous extract left a pale yellow solid named 'Heveaflavone' which was collected by filtration. The aqueous filtrate was treated with neutral and basic lead acetate solutions one after another. From the lead salts, quercetin and kaempferol-0-glycosides were isolated. The sugars were identified as rhamnose and glucose.

Heveaflavone crystallized from acetone as tiny rods, m. p. >305°. It gave a green colour with FeCl₃; Mg-HCl test was negative but NaHg test positive giving a deep pink colour. Its U.V. absorption in ethanol λ_{\max} 269, 335 m μ was characteristic of apigenin unit and the maxima showed no change on addition of sodium acetate. However, in the presence of AlCl₃, expected bathochromatic shifts were observed. The I.R. spectrum had an absorption at 1660 cm⁻¹ due to chelated carbonyl. It gave a yellow crystalline methyl ether, m.p. 219-20° and a colourless crystalline acetate, m.p. 229-31°. The methyl ether gave a strong Mg-HCl reaction and agreed well with amentoflavone hexamethyl ether (TLC and mixed m.p.). The acetate had $[\alpha]_D^{22} - 15^\circ$ (pyridine, 6.65 mg/ml). The elemental analysis and mol. wt. 706 (mass spectrum) of the acetate were in accord with the formula C₃₉H₃₀O₁₃.

Having known the basic skeleton for heveaflavone the positions of different groups were assigned as follows. The presence of a mass peak at m/e 135 (due to $\text{CH}_3\text{O}-\text{C}_6\text{H}_4-\text{C} \equiv \text{O}$) fixes one of the methoxyls at 4''' position of the amentoflavone unit. Further information regarding the other two methoxyls could be obtained from a study of NMR spectrum of the

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