8-*Hydroxy*-1,2,3,7-*tetramethoxyxanthone* (Ib). Ia was methylated with CH_2N_2 in Et_2O, yielding Ib as yellow crystals, m.p. 116–118°. ν_{max}^{KBr} (cm^{-1}): 1658, 1608, 1593. λ_{max}^{EtOH} (nm): 236, 255, 280, 305, 368 (ϵ resp. 26,400, 34,900, 28,600, 19,700, 8600); no alteration upon addition of NaOAc and of H_3BO_3 + NaOAc; $\lambda_{max}^{EtOH+NaOH}$ (nm): 238, 277, 305 sh (ϵ resp. 43,500, 34,500, 12,800) acidification restored the spectrum in EtOH; $\lambda_{max}^{EtOH+AlCl_3}$ (nm): 234, 266, 280, 295 sh, 320, 335 sh (ϵ resp. 35,700, 24,900, 26,600, 22,000, 18,300, 14,900); $\lambda_{max}^{EtOH+AlCl_3+HCl}$ (nm): 225 sh, 233, 255 sh, 279, 295 sh, 335 sh, 394 (ϵ resp. 32,500, 34,600, 22,900, 29,700, 17,600, 11,600, 7400). Gibbs test[8] λ_{max} (nm): 465, 685 (Absorbance resp. 0·35, 0·71); MS: M 332 (100%), *m/e* (%) 317 (93), 302 (36), 299 (15), 287 (17), 274 (7), 259 (19).

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LEGUMINOSAE

ALIPHATIC ALCOHOLS, β-SITOSTEROLS AND ALKALOIDS IN *CASSIA JAHNII*

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Plant. Cassia jahnii Britton & Rose. Leguminosae, known as Urumaco.

Source. Venezuelan Andes, at an altitude between 1500 and 3000 mts., near Mérida.

Use. Flowers used as purgative.

Previous work. Investigation of its anthraquinones.[1]

Flowers. Alcoholic extract of flowers hydrolysed with aq. NaOH. The unsaponifiable material extracted with benzene and chromatographed on alumina with heptane. Initial fraction afforded a colourless solid m.p. 70–73°; TLC (Silica gel G, benzene) R_f 0·8; IR bands (KBr) ν_{max} 3400, 2940, 2860, 1475, 1065, 725 cm^{-1}; NMR 6·4 τ (1 H, OH), 8·79 τ (50 H, CH_2) and 9·02 τ (3 H, CH_3): thus, the product has the properties of an aliphatic straight chain, primary alcohol. The mass spectrum has a base peak at *m/e* 83 with other major peaks at *m/e* 97, 111, 139, 182, 196, 250, 294, 308, 336, 364 and 392. The four latter peaks have a relative abundance of 27, 50, 22 and 1% respectively. Since both the IR and NMR show the presence of a hydroxy group, these four peaks, in the above proportions, cannot be due to any one compound but rather to a mixture of four compounds having molecular ions of *m/e* 308, 336, 364 and 392. The absence of a M^+-18 peaks suggests that

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the latter four peaks are due to olefins, formed by elimination[2] of water from four primary alcohols of molecular weights 326 ($C_{22}H_{46}O$, docosyl alcohol), 356 ($C_{24}H_{50}O$, carnaubyl alcohol), 382 ($C_{26}H_{54}O$, ceryl alcohol) and 420 ($C_{28}H_{58}O$, 1-octocosanol) respectively. The isolation of ceryl alcohol from the flowers of *C. fistula*[3] and myricyl alcohol ($C_{30}H_{50}O$) from *C. tora*[4] has also been reported.

Later fractions afforded a second white solid, m.p. 138–139°; $[\alpha]_D^{20}$ −46·5°; IR bands (KBr) ν_{max} 3450, 1645, 900, 810 cm^{-1}; NMR-($CDCl_3$) 4·7 τ, 5·52 τ, 9·00 τ, 9·05 τ, 9·42 τ, 9·23 τ, 9·32 τ. This material was identical with an authentic sample of β-sitosterol. (Found: C, 80·09; H, 11·02. Calc. for $C_{29}H_{50}O \cdot H_2O$; C, 80·19; H, −11·62%.) This was further confirmed by preparation of the acetate, m.p. 124–125°; $[\alpha]_D^{20}$ −40·6°; IR (KBr) ν_{max} 1730, 1650, 1250, 905 cm^{-1}; NMR ($CDCl_3$) 4·60 τ, 5·30 τ, 7·80 τ, 8·90 τ, 9·02 τ, 9·20 τ, 9·30 τ. (Found: C, 81·02; H, 11·1. Calc. for C_3, $H_{52}O_2$; C, 81·58; H, 11·40%.)

Leaves. The dried leaves were extracted after manner of Highet[5] and yielded a small amount of a brown oil which on TLC silica gel ($CHCl_3$–Et_2NH, 9:1) and on alumina ($CHCl_3$–MeOH, 9:1) showed two spots R_fs 0·72, 0·69 and R_fs 0·52, 0·47 in the two systems respectively. Authentic samples of cassine and dihydrocassine showed identical behaviour both when run alongside and when co-chromatographed. β-Sitosterol was also isolated, using the same extraction procedure as in the case of the flowers.

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THE FLAVONOIDS OF *CASSIA JAVANICA* FLOWERS

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Abstract—From the ethanolic extract of the flowers of *Cassia javanica* Linn. four flavonoid glycosides have been isolated and characterised by normal methods. The compounds have been found to be, leucocyanidin-4′-*O*-methyl ether-3-*O*-β-D-galactopyranoside; dihydrorhamnetin-3-*O*-β-D-glucopyranoside; quercetin-3′,4′,7-trimethyl ether-3-*O*-α-L-rhamnopyranoside; kaempferol-3-rhamnoglucoside. Quercetin was also obtained.

INTRODUCTION

PLANTS of the *Cassia* genus (Leguminosae; subfamily, Caesalpionoidae) are known to be a rich source of polyphenol and anthraquinone derivatives.[1] *Cassia javanica* Linn. is extensively used as a medicinal substitute of *Cassia fistula.*[2] With a view to study the nature of the constituents the chemical examination of the flowers was undertaken.

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