*Isolation of compound* 2. The essential oil was chromatographed on HPLC using a 50 × 0.8 cm LiChrosorb SI 60 (Merck) column. The eluant was MeCOMe–$C_6H_6$ (2:8), at a flow rate of 145 ml/hr. A Pye LCM2 hot wire detector was used. The fractions which contained a substance eluted at retention time 13 min were combined. After evaporation of the solvent a crystalline substance was obtained (19.5 mg). Recrystallization from MeCOMe–$C_6H_6$ gave colourless platelets, mp 139–140.5°. High resolution MS, *m/e* 246 ($M^+$) $C_{14}H_{14}O_4$. (Found: 246.0887, Calc. for 246.0890). High resolution MS of the TMSi derivative *m/e* 390 ($M^+$) $C_{20}H_{30}O_4Si_2$. (Found: 390.1679. Calcd: 390.1680).

*Cyclization of* 2. Cyclization of compound 2 was carried out by the same methods described above to give xanthyletin (6.0 mg) (mp 130.8–131.8°).

*Cyclization of* 1 *and* 2 *with* $ZnCl_2$. Each of 1 (0.23 mg) and 2 (0.23 mg) was suspended in $C_6H_6$ (2 ml) and $ZnCl_2$ (4 mg) was added, and the mixture was stirred at room temp. An aliquot (50 µl) of the organic layer was taken out every 10 min and chromatographed on HPLC using a 30 × 0.3 cm LiChrosorb SI 60 (Merck) column with EtOAc–$C_6H_6$ (5:95) as an eluant, at a flow rate of 35 ml/hr. CECIL CE212 (UV 348 nm) was used as a detector. The retention time of xanthyletin was 5.15 min. The quantity of the product was estimated from the peak height and the calibration curve given by authentic xanthyletin.

*Isolation of bergapten, chalepensin and xanthyletin.* Leaving the essential oil in a refrigerator for a month, after the removal of 1, gave bergapten (11.4 mg). Recrystallization from EtOH gave white needles, mp 187.5–189°. On HPLC of the residual essential oil, hexane eluates afforded chalepensin (110 mg). It was recrystallized from EtOH–$H_2O$ mp 87.9–88.2°. The subsequent fractions eluted with $C_6H_6$ yielded xanthyletin (54.4 mg). It was recrystallized from $C_6H_6$–hexane mp 131–132°.

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# A PRENYLATED CHALKONE FROM *MILLETIA OVALIFOLIA*

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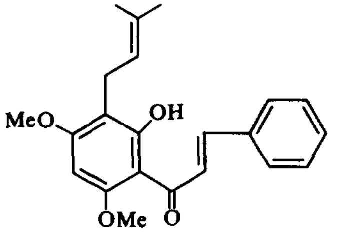
**Key Word Index**—*Milletia ovalifolia*; Leguminosae; A new prenylated chalkone; ovSlichalkone; 2′-hydroxy-3′-C-prenyl-4′,6′-dimethoxy chalkone).

In continuation of our earlier work [1], further examination of the seeds of *Milletia ovalifolia* led to the isolation of an additional chalkone designated as ovalichalkone. It was assigned structure (1) based on spectral and synthetic evidence. mp 123–24° yellow needles, molecular formula $C_{22}H_{24}O_4$ $M^+$ (352), +ve Gibbs test. $\lambda_{max}^{MeOH}$ nm 345 (log ε 4·49). IR $\nu_{max}^{KBr}$: 1630, 1580, 1470, 1410, 1330, 1220, 1120, 980, 780 cm$^{-1}$. PMR (δ values solvent $CDCl_3$): gem dimethyl allyl group is shown by the following peaks. 1·8(*d*, 6H, $J$ = 6 Hz, $C\underline{H}_3)_2C{=}$); 3.35 (*m*, 2H, $-C\underline{H}_2{-}CH{=}C$); 5.4 (*m*, 1H, $-C\underline{H}{=}C(Me)_2$. Two methoxyl groups shown by peaks at 4.0 (*s*, 3H, —OMe) and 3.95 (*s*, 3H, —OMe); aromatic protons and α, β-protons are shown by peaks at 6.1 (*s*, 1H, H-5′); 7.55 (*m*, 5H, H-2, 3, 4, 5, 6); 7.95 (*s*, 2H, H-α, β); chelated hydroxyl at 14.6 (*s*, 1H, —OH at 2′) ($D_2O$ exchangeable). The mass fragments at 337 (99%) (M-15); 321 (14.3) (M-31); 309 (99) (M-43); 297 (85.3) M-55); 275 (25.3) (M-77) and at 248 (14.3) (M-104=a); 233 (98) (a-15); 205 (77) (a-43); 193 (99) (M-55-104); 131 (44) (cinnamoyl); 103 (66), agreeing with the structure 1 for ovalichalkone. This was confirmed by synthesis from 5-*C*-prenyl-2,4-di-*O*-methyl-phloroacetophenone mp 113–114° (lit. [2] mp 113°C); UV $\lambda_{max}^{MeOH}$ nm 290 (log ε 4.33). IR $\nu_{max}^{KBr}$ 1620, 1590, 1460, 1415, 1380, 1360, 1230, 1180, 1130, 890 cm$^{-1}$. PMR (δ values solvent $CDCl_3$);



1.7 (*d*, 6H, $J$ = 6 Hz ($C\underline{H}_3)_2C{=}$); 2.6 (*s*, 3H, $-COC\underline{H}_3$); 3.3 (*m*, 2H $-C\underline{H}_2{-}CH{=}C(Me)_2$); 3.9 (*s*, 6H, 2 —OMe); 5.2 (*m*, 1H, $-CH_2\,C\underline{H}{=}C(Me)_2$); 6.0 (*s*, 1H, H-3); 14.4 (*s*, 1H, chelated —OH). The above ketone on condensation with benzaldehyde under alkaline conditions yielded a chalkone which was identical with the natural sample (co-TLC, mmp and co-IR spectra in KBr).

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