natural product was identical by co-chromatography, NMR, UV and MS with a synthetic sample.

EXPERIMENTAL

Two-dimensional chromatograms on Whatman 3MM paper were developed first in TBA (*t*-BuOH–HOAc–H_2O, 3:1:1) and then in 15% HOAc; NMR spectra of the TMS ethers were recorded for the CCl_4 and benzene-d_6 using tetramethylsilane as an internal standard. All of the UV spectra were obtained using standard procedures.[4]

Air dried and ground leaf material of *Ambrosia dumosa* Gray (collected in dunes near El Desemboque, Sonora, Mexico; Voucher No. Seaman-FS-61 is deposited in the University of Texas at Austin Herbarium) was extracted with $CHCl_3$. The 22 g of crude syrup thus obtained was chromatographed over silica gel (200 g in $CHCl_3$). Elution with $CHCl_3$ (1500 ml) followed by increasing amounts of acetone afforded the new flavone. *Color test* Purple (UV) to green-yellow (UV/NH_3); R_f (TBA) 0·83, R_f (HOAc) 0·06; UV: λ_{max} (MeOH): 342, 274, 253 sh; λ_{max} (NaOMe): 412, 340 sh, 282, 273 sh; λ_{max} ($AlCl_3$): 402, 360, 300 sh, 284, 262 sh; λ_{max} ($AlCl_3$–HCl): 397, 352, 300 sh, 284, 260 sh; λ_{max} (NaOAc): 410, 325, 280 nm; λ_{max} (NaOAc–H_3BO_3) 340, 276, 254 sh nm.

Acknowledgements—This work was supported by the Robert A. Welch Foundation (Grant F-130), the National Science Foundation (Grants GB-16411, GB-26576X and GB-27152) and Sigma Xi. Contribution to the Origin and Structure of Ecosystems Integrated Research Program of the International Biological Program. We thank Professor T. Horie for a sample of the synthetic compound.

Phytochemistry, 1972, Vol. 11, pp. 2627 to 2628. Pergamon Press. Printed in England.

CARABRONE FROM *ARNICA FOLIOSA**

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(*Received* 16 *March* 1972)

Key Word Index—*Arnica foliosa*; Compositae; sesquiterpene lactone; carabrone.

Plant. Arnica foliosa Nutt. *Source.* Experimental Garden of the Institute of Organic Chemistry and Biochemistry, Průhonice near Prague grown from seeds obtained from the Botanical Garden of the University of Uppsala (Sweden) (Specimen No. 88/26; deposited in the Herbarium of our Institute of Průhonice). *Previous work.* Isolation of carabrone from the fruits of *Carpesium abrotanoides* L. and its structure;[1] stereostructure,[2,3] synthesis[4] and isolation of carabrone from *Helenium quadridentatum.*[5]

Compound isolated. The light petroleum extract of dry ground leaves after evaporation of the solvent afforded carabrone, m.p. 90–91°, $[\alpha]_D^{20}$ +50·6°, composition $C_{15}H_{20}O_3$ (M 248. Found: C, 72·7; H, 8·25. Calc.: C, 72·6; H, 8·12) which was identified directly on the basis of its PMR spectrum (100 MHz) and on comparison of its IR and PMR spectra and m.m.p. with an authentic sample. For further identification of carabrone in natural material by PMR spectra the following proton signals are analytically significant (good

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* Part CCXVII in the series "On Terpenes". For Part CCXVI see *Coll. Czech. Chem. Commun.* in press.

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signal to noise ratio): singlet at 1·07 ppm (angular methyl), triplet at 2·15 ppm with $J = 0·35$ Hz ($CH_3 \cdot CO \cdot CH_2-$), doublet at 6·23 ppm with $J = 2·75$ Hz, and doublet at 5·53 ppm with $J = 2·45$ Hz (exomethylene group; *cis*-γ-lactone).[6]

Acknowledgements—The authors thank Dr. H. Minato (Shionogi Research Laboratory, Osaka, Japan) for the kind donation of an authentic sample of carabrone and for the copies of its PMR and IR spectra.

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Phytochemistry, 1972, Vol. 11, p. 2628. Pergamon Press. Printed in England.

STIGMASTEROL, FRIEDOOLEANAN-3β-OL AND BACCHARIS OXIDE FROM *BACCHARIS SALICIFOLIA*

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(*Received* 5 *March* 1972)

Key Word Index—*Baccharis salicifolia*; Compositae; stigmasterol; friedooleanan-3β-ol; baccharis oxide.

Plant. Baccharis salicifolia 'jarilla', Compositae. *Occurrence.* Slopes of Silla hill, N.L. *Uses.* Medicinal. *Previous work.* On sister species.[1–3]

Present work. The whole plant (voucher No. 7216) dried and powderized, (4·5 kg) was soxhlet extracted with ETOH. The extract was evaporated and the residue taken with $CHCl_3$. This solution was percolated through a silica gel column. On elution with solvents of increasing polarity the following compounds were obtained. *Stigmasterol*, $C_{29}H_{48}O$, (M^+ 412), m.p. 167–169° $[\alpha]^{25}_{589}$ −47·9°, *acetate* m.p. 140–142° $[\alpha]_{589}$ −52·0° m.m.p. superimposable IR, NMR, MS spectra co-TLC with authentic stigmasterol and its acetate. *Friedooleanan-3β-ol*, $C_{30}H_{52}O$, (M^+ 428) m.p. 277° $[\alpha]_{589}$ +16·6°; $[\alpha]_{578}$ +17·6°; $[\alpha]_{546}$ +19·4°; $[\alpha]_{436}$ +24·9°, *acetate* $C_{32}H_{54}O_2$ (M^+ 470), m.p. 292–294° $[\alpha]_{589}$ +33·1°; $[\alpha]_{578}$ +34°; $[\alpha]_{546}$ +40·4°; $[\alpha]_{436}$ +66·4°. *Friedooleanan-3-one* (friedelin) $C_{30}H_{50}O$ (M^+ 426), m.p. 256–258° $[\alpha]_{589}$ −16·3° $[\alpha]_{578}$ −18·0°; $[\alpha]_{546}$ −22·3°; $[\alpha]_{436}$ −60·7°. M.m.p. for the three compounds, superimposable IR, NMR and MS spectra co-TLC. *Baccharis oxide.* $C_{30}H_{50}O$ (M^+ 426), m.p. 147–148°; $[\alpha]_{589}$ +42·2°; $[\alpha]_{576}$ +46·3° $[\alpha]_{546}$ +50°; $[\alpha]_{436}$ +87·8°; $[\alpha]_{365}$ +135°; $[\alpha]_{316}$ +209°, m.m.p. and IR, NMR and MS spectra superimposable.

Acknowledgements—To Forge Foundation for financial support, to Dr. Teller Strasbourg University and Dr. Eloy Rodríguez, University of Texas for mass spectra and to Dr. N. A. Sorensen for a sample of baccharis oxide.

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