Phytochemistry, 1971, Vol. 10, pp. 2233. Pergamon Press. Printed in England.

SHORT COMMUNICATION

A NEW POLYINIC D-GLUCOSIDE FROM *BIDENS FRONDOSA* FLOWERS

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(*Received* 10 *February* 1970, *in revised form* 21 *December* 1970)

Abstract—From an aqueous methanolic extract of *Bidens frondosa* L. flowers we have isolated a crystalline compound $C_{19}H_{20}O_8$; data obtained from UV, IR, NMR spectra and from hydrolysis of the product suggest that it is a D-glucoside of tridecatetrain-(4.6.8.10)-en-(2)-triol-(1.12.13). This substance is new and is likely to be of biological and chemotaxonomic interest.

AS PART of our researches on new naturally occurring compounds,[1] we have isolated from an aqueous methanolic extract of *Bidens frondosa* L. (Compositae) flowers, after partition between ethyl acetate and water followed by polyamide column chromatography, a crystalline, unstable compound which corresponds to the formula $C_{19}H_{20}O_8$ (found: C% = 60·56; 60·30; H% = 5·34; 5·29, $C_{19}H_{20}O_8$ requires: C% = 60·63; H% = 5·36). The substance when heated above 110°, polymerizes without melting, has R_f 0·78 (*n*-butanol–acetic acid–water, 4:1:2) and crystallizes from aq. methanol (colourless needles). The IR spectrum (KBr) shows: $\nu_{OH\ polym.}$ = 3280 cm^{-1}; —C≡C— = 2218, 2164, 2140 cm^{-1}; *trans* —CH=CH— = 940 cm^{-1} and the UV spectrum (ethanol) exhibits maxima at 233, 241, 258, 271, 307, 326, 350 and 377 nm. By acid hydrolysis, $C_{19}H_{20}O_8$ yields glucose (descending paper chromatography with an authentic sample) and an aglycone (R_f 0·91; UV 232 (ϵ = 65·400), 241 (82·900), 257 (92·700), 270 (130·400), 306 (5·650), 326 (9·100), 350 (10·600) and 377 (6·600) nm.

Acetylation of the aglycone gives an oily product (UV λ_{max} 238, 253, 268, 304, 321, 347 and 375 nm; NMR signals displayed as four double doublets at 4·62 τ (J = 6 and 3·8 c/s), 5·64 τ (J = 5·5 and 1·6 c/s), 5·90 τ (J = 11 and 3·8 c/s), 6·12 τ (J = 11 and 6 c/s) and two doublets split in triplets at 3·83 τ (J = 15 and 3·4 c/s) and 4·50 τ (J = 15 and 1·6 c/s).

These data are in excellent agreement with those of tridecatetrain-(4.6.8.10)-en-(2)-triol-(1.12.13)-triacetate.[2]

The NMR spectrum of $C_{19}H_{20}O_8$ (DMSO d.) indicates that the compound isolated is a glucoside of tridecatetrain-(4.6.8.10)-en-(2)-triol-(1.12.13) (I) CH_2OH—CHOH—(C≡C_4)—CH=CH—CH_2OH: two olefinic signals with doublets split in triplets at 3·30 τ (J = 16 and 3·7 c/s) and 4·11 τ (J = 15 and 1·7 c/s); other signals displayed for a total amount of 18 H.

As far as we know, the only polyinic heterosides isolated from plant material known up to now are the rhamnosides and acetylrhamnosides described by Bohlmann and coworkers.[3]

[1] F. PAGANI and G. ROMUSSI, *Il Farmaco Ed. Sci.* **24**, 257 (1969).
[2] F. BOHLMANN, C. ARNDT, K. M. KLEINE and M. WOTSCHOKOWSKY, *Chem. Ber.* **98**, 1228 (1965).
[3] F. BOHLMANN, K. M. RODE and E. WALDAU, *Chem. Ber.* **100**, 1915 (1967).