Phytochemistry, 1967, Vol. 6, pp. 1033 to 1034. Pergamon Press Ltd. Printed in England

SHORT COMMUNICATION

CONSTITUTION OF ORIENTIN, EPI-ORIENTIN AND THEIR METHYL ETHERS

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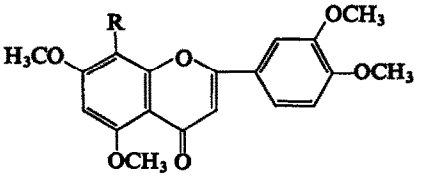
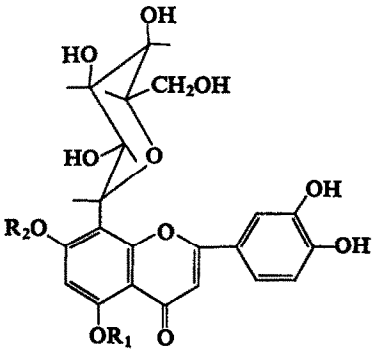
(*Received* 14 *December* 1966)

THE isolation from the leaves and flowers of *Parkinsonia aculeata* of three new C-glycosides, epi-orientin, parkinsonin-A and parkinsonin-B was recently reported.[1,2] All of them were found to have structures based on the luteolin skeleton and glucose sugar moiety in the pyranose form. Epi-orientin resembled orientin in composition, chemical reactions, u.v. and i.r. spectra but differed in melting point and rotation and hence was considered to be an epimer of the latter. Parkinsonin-A and parkinsonin-B were orientin-5-methyl and epi-orientin-5,7-dimethyl ethers respectively. In all the three compounds the position of linking was suggested as 8.

To establish the position of the sugar linkage epi-orientin tetramethyl ether has been subjected to periodate oxidation in aqueous methanolic solution yielding 8-formyl-5,7,3',4'-tetramethoxyflavone (I). This was catalytically hydrogenated in acetic acid medium in the presence of palladium charcoal to 8-methyl-5,7,3',4'-tetramethoxyflavone (II), m.p. 234°, undepressed on admixture with an authentic sample. Hence it follows that epi-orientin is luteolin-8-glucopyranoside.



(I) R=CHO
(II) R=CH_3



(III) $R_1=R_2=H$
(IV) $R_1=CH_3$; $R_2=H$
(V) $R_1=R_2=CH_3$

[1] V. K. BHATIA, S. R. GUPTA and T. R. SESHADRI, *Tetrahedron* **22**, 1147 (1966).
[2] V. K. BHATIA, S. R. GUPTA and T. R. SESHADRI, *Current Sci. (India)* **34**, 634 (1965).

As orientin has been shown to be luteolin-8-β-D-glucopyranoside,[3] it follows that epi-orientin should be the α-isomer (III). This is supported by the specific rotations.[1] Since parkinsonin-A trimethyl ether and partkinsonin-B dimethyl ether are identical in all respects with orientin and epi-orientin tetramethyl ethers respectively, it follows that parkinsonin-A is 5-O-methyl luteolin-8-β-D-glucopyranoside (IV) and parkinsonin-B 5,7-di-O-methyl luteolin-8-α-D-glucopyranoside (V) respectively.

EXPERIMENTAL

A solution of sodium metaperiodate (1 g in 100 ml water) was added to the solution of epi-orientin tetramethyl ether (300 mg in 150 ml methanol), shaken and kept in the dark. After 10 hr, the solvent was removed under diminished pressure and the aqueous solution repeatedly extracted with chloroform. Removal of the solvent and recrystallization of the residue from ethanol yielded pale yellow needles, m.p. 242–243° (50 mg) (Found: C, 65·3; H, 5·2. Calc. for $C_{20}H_{18}O_7$: C, 64·9; H, 4·9%). It gave a 2,4-dinitrophenylhydrazone.

Reduction of the formyl compound (40 mg) with hydrogen and palladium–charcoal in acetic acid (100 ml) gave a product which on repeated crystallization from ethyl acetate–light petroleum (60–80°) came out as pale yellow needles, m.p. 234°, undepressed on admixture with an authentic sample of 5,7,3′,4′-tetramethoxy-8-methyl flavone.[4]

[3] B. H. KOEPPEN and D. G. ROUX, *Biochem. J.* **97**, 444 (1965).
[4] N. R. BANNERJEE and T. R. SESHADRI, *J. Sci. Ind. Res.* (*India*) **13B**, 598 (1954).