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AMPHICOSIDE I. A NEW BITTER GLYCOSIDE FROM AMPHICOME EMODI LINDL

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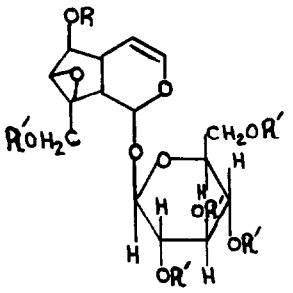
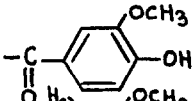
Amphicome emodi Lindl (Bignoniaceae), under the name Kaur, is extensively used in the Jammu region of Northern India as a substitute for Swertia chirata[1], a well established drug in the indigenous system of medicine[2]. The only recorded investigation[3] of the drug refers to the presence of unidentified alkaloids but the plant extract gave negative tests with alkaloidal reagents. A detailed investigation has now shown that the bitter taste is associated with a new glycoside named amphicoside (I).

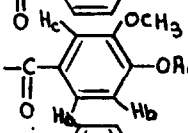
The alcohol extract[4] of the commercially available drug was found to contain substantial quantities of mannitol, along with cinnamic acid and vanillic acid. The extremely bitter mother liquor when clarified by treatment with lead acetate and worked up by a variety of methods afforded two glycosides one of which was identical with androsin[5].

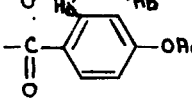
Amphicoside (I) (amorphous), $C_{23}H_{28}O_{13}$; m.p.214-15°; $[\alpha]_D^{20}$ - 115°(EtOH) UV λ_{max}^{EtOH} 223, 268; λ_{inf} 290 nm; IR (KBr cm^{-1}) 3400(OH),1725 and 1280 (aromatic ester), 1655, 1230 (enol ether), 1610, 1530, 1460, 765 (aromatic), Acetate (II). $C_{35}H_{40}O_{19}$; m.p. 168-70° (needles from ethanol), NMR (60 Mc,$CDCl_3$, τ values) 2.26 (IH, q, $J_{a,b}$ = 9 cps; $J_{a,c}$ = 2 cps); 2.31 (IH, d, $J_{c,a}$ = 2 cps); 2.87 (IH, d, $J_{a,b}$ = 9 cps). The aromatic region of the spectrum is thus consistent with the presence of a 1,3,4 tri-substituted benzene ring. Taking the olefinic signal at 3.64 (IH, d,J = 6 cps) as reference the region between 4.6-5.4 contains a total of 8 protons and the region between 5.5-6.5 again a total of 8 protons, which when adjusted for the presence of a methoxyl at 6.1 agrees with the distribution of protons in the corresponding regions of

catalposide acetate[6](III). Apart from a two proton multiplet of the protons 5 & 9 at 7.3 the high field region of the spectrum shows a total of 6 acetyl methyls, one at 7.66 two at 7.86 and three at 7.96 also in agreement with the position of these signals in catalposide acetate. The NMR spectrum thus showed the glycoside to be a derivative of catalpol and structure I was confirmed by



(I). R =  , R′ = H

(II). R =  , R′ = Ac

(III). R =  , R′ = Ac

(IV). R = H, R′ = H

hydrolysis with IRA-400 which gave vanillic acid and catalpol (IV), the latter identified by comparison (TLC and IR) with the product obtained on similar hydrolysis of catalposide[7], kindly provided by Prof. Bobbitt. Further confirmation of the location of the 4-hydroxy-3-methoxy benzoyl rest was obtained by periodate titration.

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