Carbohydrate Research, 72 (1979) C6–C8
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Preliminary communication

Identification of variose

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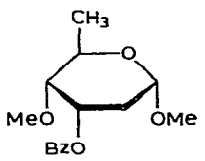
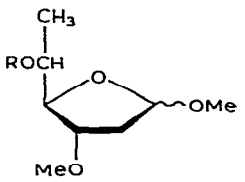
(Received February 28th, 1979; accepted for publication, March 23rd, 1979)

Variose, a constituent of the antibiotic variamycin, was originally assigned[1] the structure 2,6-dideoxy-4-*O*-methyl-D-*ribo*-hexose, based on characterisation of methyl varioside monobenzoate, supposedly **1**, by ^{1}H-n.m.r. spectroscopy. Two independent syntheses[2,3] of **1** showed that it is not identical to the varioside monobenzoate, and there is no doubt that the assignment of the ^{1}H-n.m.r. spectrum of the latter sugar derivative is in error. Reassignment of the spectrum indicated[2] that methyl varioside is a furanoside that is probably derived from a 2,6-dideoxy-3-*O*-methylhexose, several of which occur as components of the cardiac glycosides[4].



1



2 R = H
3 R = Bz

Although all known 2,6-dideoxy-3-*O*-methylhexoses have been isolated in crystalline form[4], consideration of their optical rotations suggested that variose {$[\alpha]_D$ +53° (final, water)[1] } might be identical to D-cymarose {$[\alpha]_D$ +55° (final, water)[5] } or, possibly, D-diginose {$[\alpha]_D$ +60° (final, water)[6] }, which are 2,6-dideoxy-3-*O*-methyl-D-*ribo*- and -D-*lyxo*-hexose, respectively. Glycosidation of D-cymarose* with methanol containing a catalytic amount of conc. sulphuric acid at 4° for 18 h, followed by careful chromatography on silica gel (elution with dichloromethane–acetone, 4:1), gave an inseparable mixture of one of the methyl furanosides **2** [δ(chloroform-*d*) 5.08 (quartet, $J_{1,2}$ 5 and 3 Hz, H-1)] and the methyl β-pyranoside[8] [δ 4.55 (quartet, $J_{1,2ax}$ 9, $J_{1,2eq}$ 2 Hz, H-1)], followed by the other methyl furanoside, b.p. 81° (bath)/2 mmHg, $[\alpha]_D$ +175° (*c* 0.7, chloroform) (Found: C, 54.2; H, 9.0. $C_8H_{16}O_4$ calc.: C, 54.5; H, 9.15%); δ 5.04 (t, 1 H, $J_{1,2}$ and $J_{1,2'}$

*Methyl α-D-cymaropyranoside was synthesized from the readily available methyl 4,6-*O*-benzylidene-2-deoxy-α-D-*erythro*-hexopyranosid-3-ulose[7] by a route essentially similar to one recently reported[8]. Hydrolysis of this glycoside with acid gave the free sugar[5].

3 Hz), 3.38 and 3.33 (2 s, 6 H, 2 OMe), and 1.20 (d, 3 H, $J_{5,6}$ 6 Hz, HC*Me*). Benzoylation of the pure furanoside **2** gave a 5-benzoate **3**, $[\alpha]_D$ +60° (*c* 1, chloroform), whose ^{1}H-n.m.r. spectrum (Fig. 1) was indistinguishable from that recorded[1] for methyl varioside monobenzoate {$[\alpha]_D$ +60 ±2° (*c* 0.2, chloroform)}. The assignment of resonances in the spectrum of **3** was confirmed by proton-decoupling experiments. While we favour the α configuration for the pure methyl D-cymarofuranoside isolated from the glycosidation, this assignment is tentative and is not significant in establishing that variose is identical to cymarose. A synthesis of β-**2** currently in progress should establish the anomeric configurations of the methyl D-cymarofuranosides.

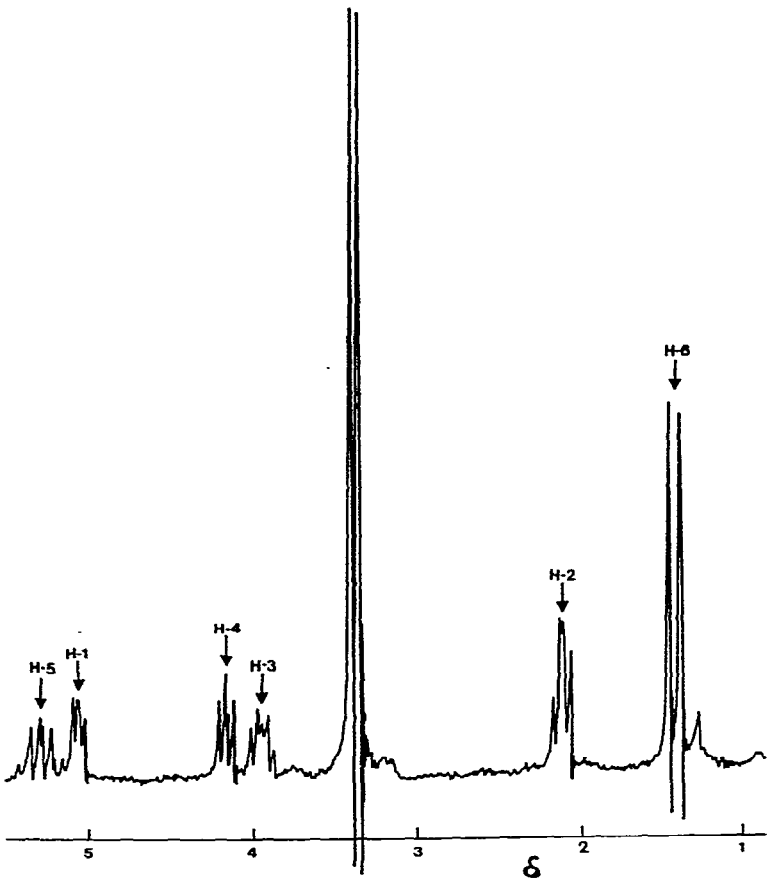


Fig. 1. Part of the 90-MHz ^{1}H-n.m.r. spectrum of the pure methyl 5-*O*-benzoyl-D-cymarofuranoside (3) in chloroform-*d*.

ACKNOWLEDGMENT

One of us (A.S.M.) thanks the University of Dundee for financial support.

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