SUMMARY

1. The glycosylation of 20(S),24(R)-epoxydammarane-3α,12β,25-triol in the presence of insoluble silver compounds has been studied.

2. 20(S),24(R)-Epoxydammarane-3α,12β,25-triol 3-O-(2',3',4',6'-tetra-O-acetyl-ß-D-glucopyranoside) and its 3,12-di-O-(2',3',4',6'-tetra-O-acetyl-ß-D-glucopyranoside) have been synthesized for the first time.

LITERATURE CITED


WITHASTEROIDS OF Physalis.

V. A STUDY OF THE 1H AND 13C NMR SPECTRA OF THE WITHASTEROIDS VISCONOLID AND 28-HYDROXYWITHAPERUVIN C

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The PMR and 13C NMR spectra of new withasteroids — visconolide and 28-hydroxywithaperuvin C, isolated from Physalis viscosa L. — have been investigated. A detailed analysis of the spectral characteristics obtained is given. For visconolide is proposed the structure of 4B,12α,17B,20R,28-pentahydroxy-l-oxo-5B,6B-epoxy-22R-witha-2,24-dienolide, and for 28-hydroxywithaperuvin C that of 6B,14α,17B,20R,28-pentahydroxy-1-oxo-22R-witha-2,4,24-trienolide.

Continuing a study of the withasteroids of Physalis viscosa L. [1-4], we have isolated three new compounds from this plant.

A withasteroid with the composition C28H38O7, mp 172-173°C, [α]D22−83±2°, was identified on the basis of a comparison of spectral characteristics and physicochemical constants of the compound itself and of its acetyl derivative as withaperuvin C isolated previously from the roots of Physalis periviana L. [6]. The other two compounds were present in the plant in minor amounts and are new. A withasteroid with the composition C28H38O7, we have called visconolide (I), and the second compound, with the composition C28H38O8, is 28-hydroxywithaperuvin C (III).

Visconolide (I). An intense maximum in the UV spectrum at 220 nm (log ε 4.14) and an absorption band in the IR spectrum at 1690 cm−1 showed that compound (I) contained an α,β-unsaturated lactone ring. The mass spectrum contained the peaks of ions with m/z 185 (24%).

TABLE 1. Chemical Shifts and Spin-Spin Coupling Constants (δ, ppm; J, Hz; C₆D₆N; 0 - TMS) of the Protons of Visconolide (I), of 28-Hydroxywithaperuvin C (III), and of Their Acetyl Derivatives (II and IV)

<table>
<thead>
<tr>
<th>Compound</th>
<th>H-2</th>
<th>H-3</th>
<th>H-4</th>
<th>H-6</th>
<th>H-22</th>
<th>CH₃-18</th>
<th>CH₃-19</th>
<th>CH₃-21</th>
<th>CH₃-27</th>
<th>CH₃OH</th>
<th>OAc</th>
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<tr>
<td>I</td>
<td>6.45 d</td>
<td>7.19 q</td>
<td>4.03 d</td>
<td>3.36</td>
<td>5.35 q</td>
<td>1.33 s</td>
<td>1.81 s</td>
<td>1.87 s</td>
<td>2.05 br.d</td>
<td>4.43; 4.73</td>
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<tr>
<td></td>
<td>3J=10.0 Hz</td>
<td>3J=10.0 and 6.4 Hz</td>
<td>3J=6.4 Hz</td>
<td>br.s</td>
<td>3J=13.5 and 3.1 Hz</td>
<td>3J=13.5 and 3.1 Hz</td>
<td>3J=13.5 and 3.1 Hz</td>
<td>3J=13.5 and 3.1 Hz</td>
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<td>3J=13.5 and 3.1 Hz</td>
<td>3J=13.5 and 3.1 Hz</td>
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<tr>
<td>II</td>
<td>6.49 d</td>
<td>7.15 q</td>
<td>5.04 d</td>
<td>3.49</td>
<td>5.27 q</td>
<td>1.39 s</td>
<td>1.77 s</td>
<td>1.77 s</td>
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<tr>
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<td>3J=9.9 Hz</td>
<td>3J=9.9 and 6.3 Hz</td>
<td>3J=6.3 Hz</td>
<td>br.s</td>
<td>3J=13.3 and 2.8 Hz</td>
<td>3J=13.3 and 2.8 Hz</td>
<td>3J=13.3 and 2.8 Hz</td>
<td>3J=13.3 and 2.8 Hz</td>
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<td>3J=13.3 and 2.8 Hz</td>
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<tr>
<td>III</td>
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<td>6.91 q</td>
<td>6.15 d</td>
<td>4.94</td>
<td>5.37 q</td>
<td>1.48 s</td>
<td>1.85 s</td>
<td>1.83 s</td>
<td>2.06 br.d</td>
<td>4.44; 4.74</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>3J=9.7 Hz</td>
<td>3J=9.7 and 6.0 Hz</td>
<td>3J=6.0 Hz</td>
<td>br.t</td>
<td>3J=13.4 and 3.1 Hz</td>
<td>3J=13.4 and 3.1 Hz</td>
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<td>3J=13.4 and 3.1 Hz</td>
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<tr>
<td>IV</td>
<td>6.22 d</td>
<td>6.91 q</td>
<td>6.34 d</td>
<td>5.79 br.t</td>
<td>5.27 q</td>
<td>1.53 s</td>
<td>1.63 s</td>
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<td>br.t</td>
<td>3J=13.1 and 3.1 Hz</td>
<td>3J=13.1 and 3.1 Hz</td>
<td>3J=13.1 and 3.1 Hz</td>
<td>3J=13.1 and 3.1 Hz</td>
<td>3J=13.1 and 3.1 Hz</td>
<td>3J=13.1 and 3.1 Hz</td>
<td>3J=13.1 and 3.1 Hz</td>
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* d — doublet; q — quartet; br.s — broadened singlet; br.t — broadened triplet; s — singlet.