

## MESOINOSITOL FROM SOME SPECIES OF THE GENUS

### *Campanula*

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The fresh herb *Campanula elatior* (Fom) Grossh., *C. taurica* Juz, and *C. hohenackeri* Fisch et Mey., collected in Ciscaucasia was extracted three times with hot water. The aqueous extracts were combined, evaporated in vacuum, and then treated with ethyl acetate. The ethyl acetate extracts were concentrated to small volume and mixed with a tenfold volume of  $\text{CHCl}_3$ . The crude product that deposited was separated off and was recrystallized repeatedly from aqueous ethanol (1:1). An optically inactive substance with the composition  $\text{C}_6\text{H}_{12}\text{O}_6$ , mp 220–222°C was obtained.

Paper chromatography in the acetone–water (95:5) [1] and isopropanol–pyridine– $\text{CH}_3\text{COOH}$ – $\text{H}_2\text{O}$  (8:8:1:4) [2] systems, after the treatment of the chromatograms with benzidine–potassium periodate solution [3] and the Tollens reagent [4], showed the presence of a single substance with  $R_f$  0.13 and 0.32, respectively.

IR spectrum,  $\text{cm}^{-1}$ : 740, 904, 932 (typical ring frequencies), 890 (equatorial hydrogen atom), no absorption frequency was found at 858, showing the absence of free  $\text{CH}_2$  groups [5], 1010–1020  $\text{cm}^{-1}$  (w), axial, and 1055 (m), equatorial (stretching vibrations of C–O bonds in an alicyclic ring), 1120, 1245 (deformation vibrations of secondary OH groups), 1150, 1198 (deformation vibrations of C–H bonds in secondary alcohols), 3230–3445 (stretching vibrations of OH groups) [6].

The hexaacetate had mp 215°C (70% ethanol) [7], the hexapalmitate mp 48–51°C (from glacial  $\text{CH}_3\text{COOH}$ ) and 54–56°C (from benzene), and the hexabenzotate mp 258°C (from glacial  $\text{CH}_3\text{COOH}$ ) [8].

Bromination [9] of the hexitol with a mixture of acetyl bromide and acetic anhydride for 6 h at 120°C in a sealed tube led to the formation of the pentaacetate of meso-(1,3,5)-A-6-bromoquercitol with mp 240°C (from absolute ethanol). The ease and rapidity of debromination under the action of NaOH [10] and the negative reaction under these conditions for  $>\text{C}=\text{O}$  is explained by the presence in the molecule of hydroxy groups at  $\text{C}_1$  and  $\text{C}_5$  in the trans position to the bromine atom at  $\text{C}_6$ . On debromination of the bromohydrin of the inositol with Zn in glacial  $\text{CH}_3\text{COOH}$  and subsequent saponification of the resulting product with a saturated solution of  $\text{NH}_3$  in  $\text{CH}_3\text{OH}$ , conduritol-B [d,l] (1,3)-R-cyclohex-5-ene-1,2,3,4-tetrol was obtained with mp 205°C ( $\text{CH}_3\text{OH}$ –benzene) [9].

The substance gave no depression of the melting point with an authentic sample of mesoinositol kindly given to us by Dr. J. S. Craigie (Canada).

The results of the investigation that we have performed have permitted the cyclic hexitol isolated to be identified as cyclohexane-1,2,3,5/4,6-hexol [11], or mesoinositol.

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