A NOTE ON meso-ERYTHRITOL, A METABOLIC PRODUCT OF ASPERGILLUS TERREUS

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In a recent paper (1), we reported the formation of itatartaric acid by an ultraviolet-induced mutant of Aspergillus terreus. We have since found that by prolonged ether extraction of the concentrated culture liquor therein described a brown gum is obtained which, after some months standing, deposited large crystals. These crystals (3.25 gm.) could be separated from the gum on the basis of their insolubility in methanol. Decolorization with carbon and crystallization from 80 per cent alcohol gave 2.38 gm. of colorless, tetragonal crystals, m.p. 117–120°. A second crop of 0.47 gm. was obtained (m.p. 115–118°). The water solubility, neutral reaction, and negative Fehling's test for reducing sugars suggested a polyhydric alcohol. The melting point and analysis (calculated for C₄H₁₀O₄, 39.34 per cent C, 8.26 per cent H; found, 39.6 per cent C, 8.34 per cent H) indicated the compound to be meso-erythritol. Identity was established by a mixed melting point test with an authentic sample of meso-erythritol, m.p. 118–121°. The x-ray diffraction patterns of the natural and authentic samples were the same. The tetraacetate of the isolated product, m.p. 85–86°, was shown by the mixed melting point test and x-ray patterns to be identical with the tetraacetate of the authentic sample, m.p. 85–86°. The yield of meso-erythritol (2.85 gm.) was small since the amount of glucose supplied was 825 gm.

A survey of the literature shows that, although meso-erythritol frequently occurs in algae and lichens, there has been only one report (2) of the isolation of this sugar alcohol from mold culture liquors. The molds used in this work by Oxford and Raistrick were Penicillium brevi compactum Dierckx and Penicillium cyclopium Westling. These investigators point out that, in contrast to meso-erythritol, mannitol is a tissue constituent of many mold species and is sometimes found in the culture liquor in large amounts.

BIBLIOGRAPHY


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