FORMATION OF PATULIN BY Penicillium cyaneo-fulvum BIOURGE

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From the culture liquid of the fungus P. cyaneo-fulvum, strain 1416, grown on a Czapek or Czapek–Dox medium, by extraction with ether followed by chromatographic separation on a column of alumina we have obtained a homogeneous substance which is responsible for the phytotoxic properties of this microorganism (average yield about 150 mg/liter of culture liquid). The compound has the composition $C_7H_4O_6$, mol. wt. 152 (cryoscopy), mp 110°C (from chloroform), readily soluble in water and in the majority of organic solvents, gives a color reaction with benzidine (orange-red); reaction with $FeCl_3$ negative. UV spectrum: $\lambda_{max}^{acetone}$ 275 nm; IR spectrum: ν_{max} (KBr tablets), cm^{-1}: 3488-3390, 2932, 1756, 1628, 1479, 1382, 1220, 1100, 1040, 880, 864.

The physicochemical properties, and also the UV and IR spectra of the substance studied are close to those of patulin [1-3].

We have recorded the IR spectra of an authentic sample of patulin* and the substance obtained from the culture liquid, and have also determined the melting point of a mixture. In this way, their identity has been established.

Patulin in concentrations of 6, 10, 50, 100, and 200 μg/ml was tested for phytotoxic activity. It was found that in a concentration of 10 μg/ml patulin completely suppresses the growth of maize and wheat shoots and of pea, radish, cress, and lettuce seeds; in a concentration of 5 μg/ml it suppresses the growth of maize shoots by 60% and causes them to curl.

We are the first to have isolated patulin from the culture liquid of the fungus P. cyaneo-fulvum.

LITERATURE CITED

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3. The Chemistry of Antibiotics [in Russian], Moscow (1961).

* We obtained the authentic sample of patulin from the Division of Fungus Physiology of the Academician D. K. Zabolotnyi Institute of Microbiology and Virology of the Academy of Sciences of the Ukrainian SSR.

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