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MONO-, DI-, AND TRIACETYLPHLOROGLUCINOLS FROM PSEUDOMONAS FLUORESCENS

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In the study of the causes of the phytotoxicity of soil microorganisms, from an ethereal extract of an acidified culture liquid of bacteria similar to Pseudomonas fluorescens, strain 260, grown on an organic-mineral medium, we have isolated three individual substances with pronounced phenolic properties. The substances isolated inhibited the growth of seven series of plants differently.

The main substance (and that with the highest physiological activity) has mp 169–171° C ($[\alpha]_D^{20}$ ±0°, c 10.0; ethanol), and amounts to approximately 90% of the sum of the three phenols isolated, being obtained with an average yield of 40 mg/*l* of fermentation medium.

Under the usual conditions, the substance forms a 2,5-dinitrophenylhydrazone (mp 253–255° C) and two acetylation products, with mp 90–92° C and 116–118° C. The iodoform test is positive.

On the basis of its elementary composition, molecular weight (mass spectrometry) of 210.050; the percentage of nitrogen in the 2,4-dinitrophenylhydrazone, 14.40, and its IR, UV, and NMR spectra [γ_{max}, cm^{-1}: 1580, 1628, 3175, 3480; $\lambda_{max}^{CH_3OH}$ 271 mμ, $\lambda_{max}^{CH_3OH+NaOH}$ 289 mμ; δ = 6.5 (phenolic proton), δ = 5.75 (aromatic proton), δ = 2.58 (proton of a methyl group)], the substance was identified as 2,4-diacetylphloroglucinol, the melting point [1], IR spectrum [2], and UV spectrum [3,4] of which are close to those for our substance. This gave no depression of the melting point with a sample of 2,4-diacetylphloroglucinol obtained by the method of Desai et al. [1].

The acetyl derivative with mp 90–92° C was identical with 1,3,5-triacetoxy-2,4-diacetylphloroglucinol [5], and the substance having mp 116–118° C with 3,5-diacetoxy-2,4-diacetylphloroglucinol.

The minor substances with mp 158–159° C and 217–218° C were identified on the basis of the results of elementary analysis, physicochemical properties, and the absence of depressions of the melting points with the synthetic material [1] as 2,4,6-triacetylphloroglucinol and phloroacetophenone, respectively. This is the first time that mono-, di-, and triacetylphloroglucinols have been detected in the products of the metabolism of microorganisms.

The mass and NMR spectra of 2,4-diacetylphloroglucinol were obtained by Dr. J. A. Wunderlich (CSIRO, Melbourne).

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30 September 1968

All-Union Scientific-Research Institute for Agricultural Microbiology

OBITUARY NOTICE: NIKOLAI ALEKSEEVICH PREOBRAZHENSKII

(1896–1968)

Professor Nikolai Alekseevich Preobrazhenskii, Hero of Socialist Labor, Honored Worker in Science and Technology of the RSFSR, Laureate of the State Prize, Honorary Doctor of the Budapest Technical University, Director of the Department of Chemistry and Technology of the Fine Organic Compounds of the M. V. Lomonosov Moscow Institute of Fine Chemical Technology, and Doctor of Chemical Sciences, died suddenly on November 20, 1968.

The scientific and teaching work of N. A. Preobrazhenskii began in the Lomonosov Moscow State University, from which he graduated in 1924. After postgraduate study in Moscow State University, he worked in the leading

chemical institutes of the country: in the S. Ordzhonikidze All-Union Chemical and Pharmaceutical Research Institute, in the Moscow Higher Chemical and Technological College, in the All-Union Cinmeatographic and Photographic Scientific-Research Institute, in the K. E. Voroshilov Military Academy of Chemical Defence, and in the Institute of Organic Chemistry of the Academy of Sciences of the USSR, where he directed the alkaloids laborabory. In 1938, Nikolai Alekseevich was elected director of a department of the M. V. Lomonosov Moscow Institute of Fine Chemical Technology.

N. A. Preobrazhenskii devoted more than 45 years to scientific and teaching activity. Among his pupils there are hundreds of chemical engineers working successfully in scientific research institutes and national undertakings, 71 candidates of chemical sciences, and 16 doctors of science. In his 535 scientific papers are to be found more than 200 families of his students.

The classical syntheses of extremely important natural substances carried out by N. A. Preobrazhenskii and his students have entered the capital reserves of the chemistry of natural compounds. The problems on which he worked cover questions connected with the structure and synthesis of a number of alkaloids of practical importance (pilocarpine, emetine, tubocurarine, tropine, arecoline, and others), vitamins and cofactors (A, B, B_2, B_6, E, PP, B_{15}, adenosine monophosphate, and the coenzyme of acylation), lipids (glycerophosphatides, inositophosphatides, plasmalogens, sphingolipids, fats and oils, and higher fatty acids), porphyrins and chromoproteins (hemin, cytochrome C), and terpene compounds (exaltone, isophytol, etc.).

Nikolai Alekseevich was one of the organizers of the All-Union Vitamin Scientific-Research Institute. He created the scientific basis for the large-scale production of vitamins A, B_1, B_2, E, C, and others.

The scientific textbook "Khimiya organicheskikh lekarstvennykh veshchestv" ["The Chemistry of Organic Medicinal Substances"] written by N. A. Preobrazhenskii together with E. I. Genkin is widely known. At the present time, a second volume of this textbook and a multivolume work on bioorganic chemistry are being prepared.

In recent years, Prof. N. A. Preobrazhenskii was a scientific and technical member of the Council of Ministers of the Medicinal Industry, a member of the Scientific Council on the Problems of Bioorganic Chemistry, and a member of the Scientific Councils of MITKhT [M. V. Lomonosov Moscow Institute of Fine Chemical Technology], VNIVI [All-Union Vitamin Scientific-Research Institute], VNIKhFI [Sergo Ordzhonikidze All-Union Chemical and Pharmaceutical Scientific-Research Institute], and others.

In 1952 he was awarded a class I state prize for his work in the field of alkaloids. In 1965 he was granted the honorary degree of Doctor of the Budapest Technical University. N. A. Prebrazhenskii was an honorary citizen of the town of Kostroma.

The Soviet government valued the merits of Professor N. A. Preobrazhenskii highly, awarding him the title of a Hero of Socialist Labor together with the Order of Lenin and the "Hammer and Sickle" gold medal, also marking his work by the Orders of Lenin, of the Red Banner of Labor, of the "Badge of Honor," and by medals.

A man of great spirit, and open nature, outstanding characteristics and inexhaustible optimism, Nikolai Alekseevich Preobrazhenskii was a talented tutor of youth, and was lecturing students and directing numerous postgraduate students and colleagues up to the very last days. He was a tireless propagandist and popularizer of the science of the chemistry of life and an indefatigable innovator and searcher after the new who selflessly loved his work. Sincerely loving his fellow men, he dreamed of his science bringing him knowledge of the secrets of living nature and of putting this knowledge at the service of the health and prosperity of mankind.

Pupils and Colleagues

LIST OF N. A. PREOBRAZHENSKII's SCIENTIFIC PAPERS

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