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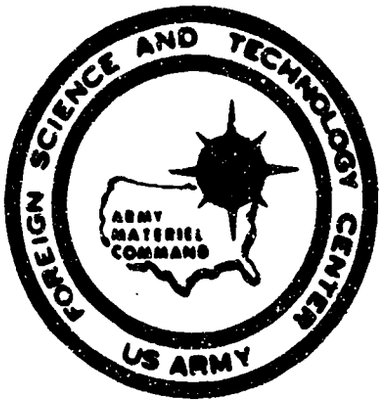

NEW FUNGI SPECIES OF THE GENUS SPOROTRICHUM FR. AND TRICHODERMA FR. ISOLATED FROM FINE ARTS WORKS

by

D. S. Kuritzina and T. P. Sizova

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ENGLISH TITLE: NEW FUNGI SPECIES OF THE GENUS SPOROTRICHUM FR. AND TRICHODERMA FR. ISOLATED FROM FINE ARTS WORKS

FOREIGN TITLE: NOVYE VIDY GRIBOV IZ RODOV SPOROTRICHUM FR. I TRICHODERMA FR., IZOLIROVANNYKH S PROIZVEDENIY IZOGBAZITEL'NOGO ISKUSSTVA

AUTHOR: D. S. Kuritzina and T. P. Sizova

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NOTICE

Systematic study of mycoflora which infects works of fine and applied arts, was begun in the USSR in 1962. The study was carried out by detailed examination of museum treasures and expositions, and also by inspection of exhibits sent for restoration to the State Central Art Workshop for Scientific Restoration imeni academician I. E. Grabar'. It was found that fungi in these cases are quite varied and belong to different genuses and species, mainly of the class *Fungi imperfecti* (Kuritzina, 1966).

Two new fungi species were isolated by the authors upon examination of the color layer of paintings in the Vologda and Novgorod museums.

Sporotrichum gorlenkoanum Kuritz. et Siz. sp. nov.

In a Czapek culture colonies achieved 2.7 to 3 cm in diameter by the tenth day of growth at 25°C; they are dense, fuzzy, white color, flat or slightly raised in the center, sometimes with a bulge in the center to 5 mm in diameter and 3 mm high, the growing edge is even (Figure 1A), there is a slight amount of exudate, colorless, transparent, in small droplets, and the reverse side is pale lemon yellow (D-5, after Bondartsev's scale, 1954) or cream colored (B-6).

In Wort agar the colonies achieve a growth by the tenth day of 2-2.5 cm in diameter at 25°C; they are dense, fluffy-velvety, white color, flat, with radial flutes and a depression in the center; sometimes in the center there is a tubercle to 1 cm diameter and up to 3-4 mm high, the growing edge is even, there is no exudate (Figure B), and the reverse side is wrinkled and untinted. Hypha mycelium are septate, colorless, and 1.5-2 microns thick.

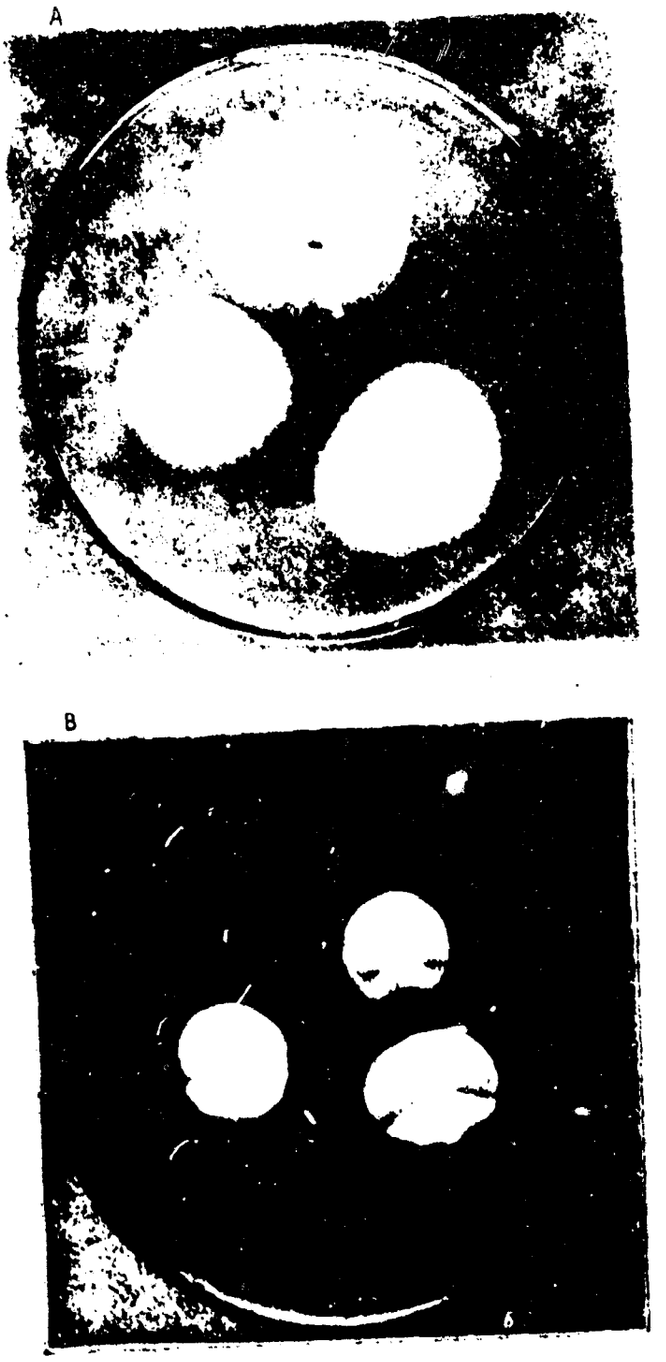

Figure 1. *Sporotrichum gorlenkoanum*, Kuritz. et Siz.
A, B - Colonies after 10 days in Czapek and Wort cultures;

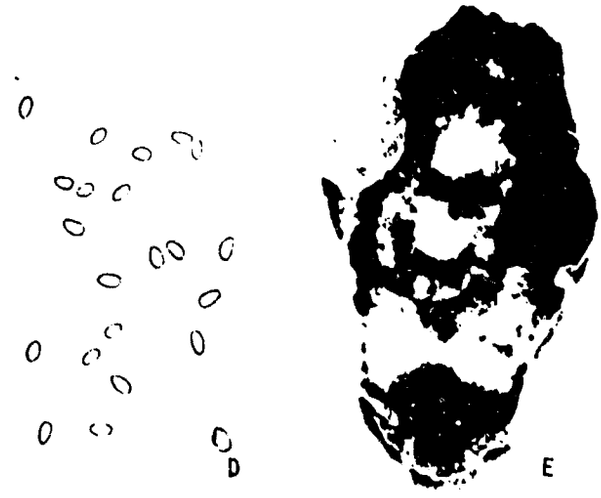

Figure 1. *Sporotrichum gorlenkoanum*, Kuritz. et Siz. (continuation)
C, Conidiophores with conidia. x250; D, Conidia, x600;
E, Growth on color layer of fragment of a monumental tempera painting;

F G

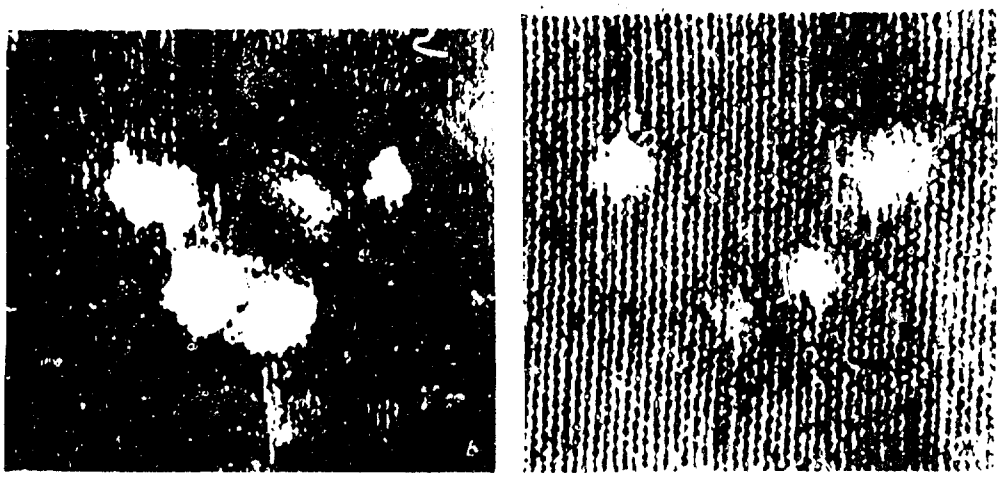

Figure 1. *Sporotrichum gorlenkoanum*, Kuritz. et Siz. (continuation) F, G, Growth on color layer and canvas of the same specimen of an easel oil painting (photo by V. F. Manoshkin, I. N. Petrov, and R. A. Tikhonov).

The conidiophores are colorless, numerous, they branch out from the substrate and aerial hyphae in the form of single lateral ramuli, they are simple or irregularly branched, and the upper section with denticles which taper toward the apex (Figure 1C), 20-80 × 1.5-2 μ. The conidia are single cell, lateral and apical, they are formed singly on the denticles in the upper part of the conidiophores (Figure 1D), they are rough, pear-shaped, or drop-shaped 2.5-3 × 1.5-2 μ.

More similar of the species described, *S. bombicinum Cda.* is distinguished by very small, rough, drop-shaped conidi. It grows on the color layer of works of monumental tempera painting in the form of fluffy white blooms (Figure 1E); in the experiment it infests easel oil paintings, forming blooms of the same type and penetrating them throughout (Figure 1F and G).

Phylum. USSR, Novgorod, culture C-38, isolated from color layer of works of monumental tempera painting of XIX century, 2 X 1962, Kuritzina, preserved at the chair of lower plants of Moscow State University and in the State Central Art Workshop for Scientific Restoration imini I. E. Grabar'.

Trichoderma arachnoidea Kuritz. et Siz. sp. nov.

The colonies grow rather rapidly in a Czapek culture and by the seventh day reach 4.5-5 cm in diameter; they are thin, spread out, white color, with mycelium imbedded in the substrate, and with a modest aeromycelium with conidiophores strongly compressed to the culture, in the center the aeromycelium is more abundant, in the younger stages the colonies are similar in their external appearance to the snowflakes (Figure 2A), and in their latter stages their sporiferous part is similar to grass green color (L-4 after Bondartsev's scale), coloring does not appear earlier than 2 weeks after inoculation, there is no exudate, the growing edge is spider-webbed, and the reverse side is colorless.

The colonies grow rapidly in Wort agar, occupying the entire surface of Petri dish by the seventh day at 25°C; they are thin, flat, with radial flutes branches out from the center or without them (Figure 2B), white mycelium, strongly compressed, they have mats with very small conidiophores, pointed end of white or almost yellowish color (B-1 after Bondartsev's scale); tinting of the sporiferous section of the colonies in grass green color is rarely encountered and no earlier than 2 weeks after inoculation, there is no exudate, the growing edge is even, and the reverse side is colorless.

The conidiophores are arranged in groups, profusely branched, they branch out from aerial and substrate hypha, they are smooth up to 80 × 2-3 μ, sterigma are singular or in groups of 2-3, often accumbent, and are bottle-shaped or cone-shaped, 8-12 × 2-3 μ. The conidia are single celled, rough, egg-shaped, lemon-colored, 5-6 × 2-3 μ (Figure 2D), in small bolls, glued together by slime on the ends of the sterigma, and numerous apical and intercalare chlamydospores, often arranged in chains, form in the hypha (Figure 2C).

Phylum. USSR, Vologda, culture T-22, isolated from color layer of icon, 1 July 1964, Kuritzina, preserved at the chair of lower plants of Moscow State University and in the state central art workshop for scientific restoration imini I. E. Grabar'.

Of the species described most nearly resembling *Trichoderma Fr.*, *T. album* Preuss is distinguished by the capability to grow and sporiferate in a Czapek culture, and also by the shape and large size of the conidia. It grows on the color layer of icons in the form of a branched bloom of white color, forming cushion-mats (Figure 2E).

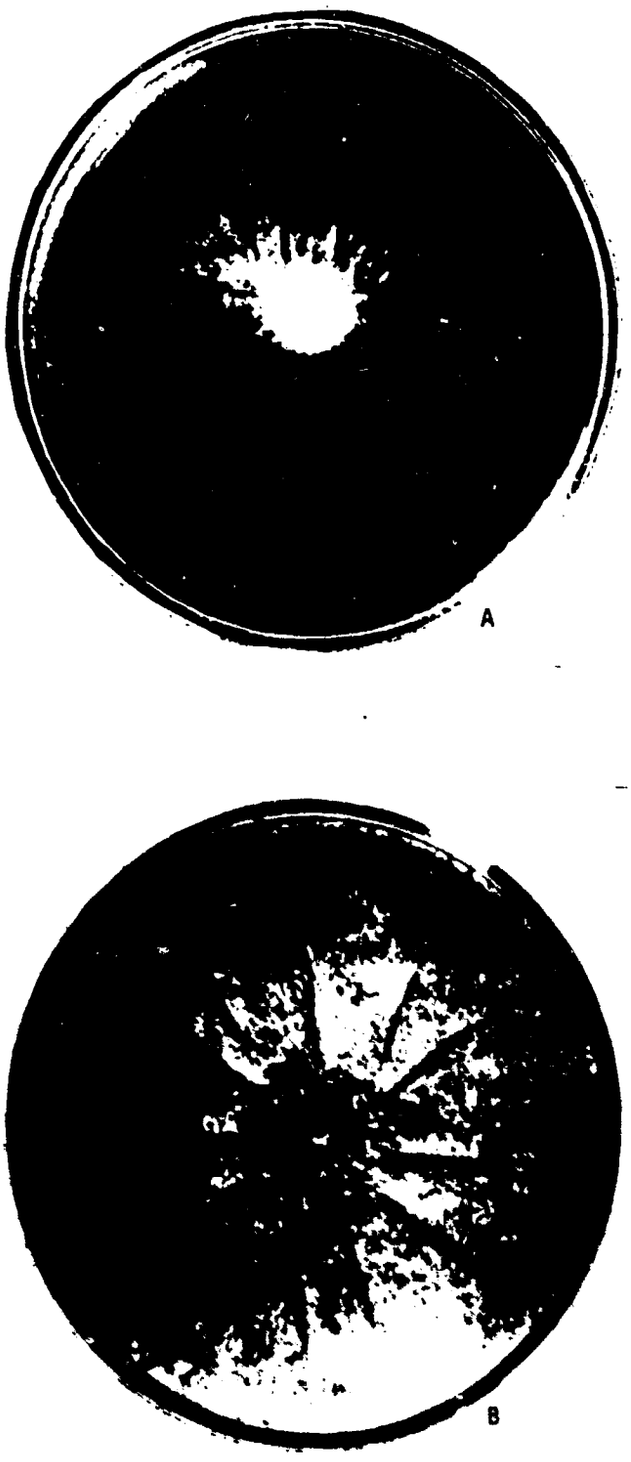

Figure 2. *Trichoderma arachnoidea* Kuritz. et Siz.
A,B, Colonies after 7 days in Czapek and Wort cultures;

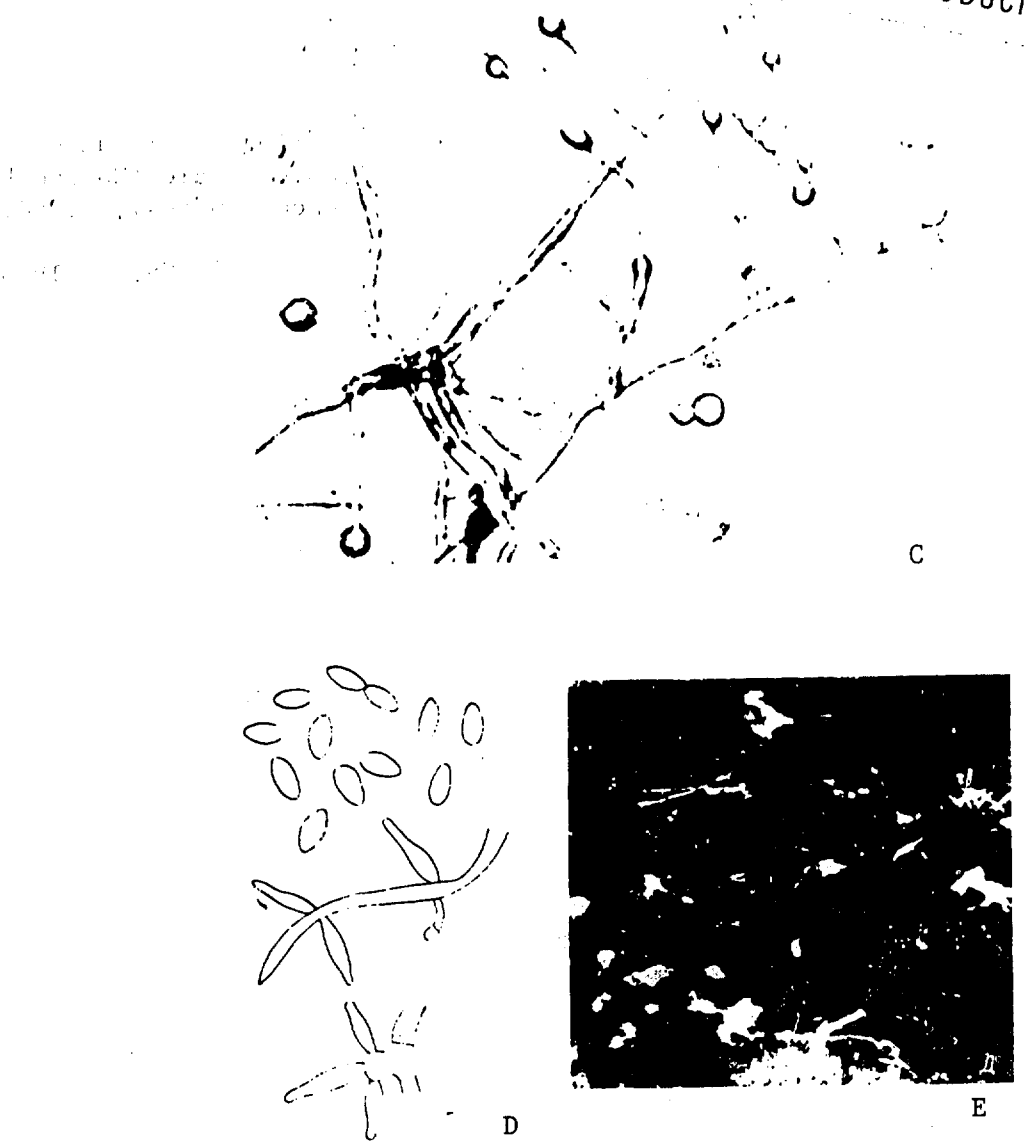

Figure 2. *Trichoderma arachnoidea* Kuritz. et Siz. (continuation) C, Chlamydospores, x250; D, Conidiophores with conidia, x600; E, Growth in color layer of section of icon (photos by V. F. Manoshkin, I. N. Petrov, and R. A. Tikhonov).

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13. ABSTRACT

The two fungi species were cultivated in Czapek and Wort cultures and their growth characteristics are described. The species were isolated from various works of fine art and museum treasures. It was found that the fungi are very diverse and belong to different genuses and species, mainly of the class Fungi imperfecti.

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