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'ACT GRISEUS' 1985/11, PRODUCER OF  
ANTIVIRAL SUBSTANCES

R. V. Kirsanova, et al

Foreign Technology Division  
Wright-Patterson Air Force Base, Ohio

15 April 1974

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SUBSTANCES

BY: R. V. Kirsanova and P. A. Zhukova

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U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А	<i>а</i>	A, a	Р	<i>р</i>	R, r
Б	<i>б</i>	B, b	С	<i>с</i>	S, s
В	<i>в</i>	V, v	Т	<i>т</i>	T, t
Г	<i>г</i>	G, g	У	<i>у</i>	U, u
Д	<i>д</i>	D, d	Ф	<i>ф</i>	F, f
Е	<i>е</i>	Ye, ye; E, e*	Х	<i>х</i>	Kh, kh
Ж	<i>ж</i>	Zh, zh	Ц	<i>ц</i>	Ts, ts
З	<i>з</i>	Z, z	Ч	<i>ч</i>	Ch, ch
И	<i>и</i>	I, i	Ш	<i>ш</i>	Sh, sh
Й	<i>й</i>	Y, y	Щ	<i>щ</i>	Shch, shch
К	<i>к</i>	K, k	Ъ	<i>ъ</i>	"
Л	<i>л</i>	L, l	Ы	<i>ы</i>	Y, y
М	<i>м</i>	M, m	Ь	<i>ь</i>	'
Н	<i>н</i>	N, n	Э	<i>э</i>	E, e
О	<i>о</i>	O, o	Ю	<i>ю</i>	Yu, yu
П	<i>п</i>	P, p	Я	<i>я</i>	Ya, ya

\* ye initially, after vowels, and after ъ, ь; e elsewhere.  
 When written as ѣ in Russian, transliterate as yě or ě.  
 The use of diacritical marks is preferred, but such marks  
 may be omitted when expediency dictates.

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ACT. GRISEUS 1985/11, PRODUCER OF  
ANTIVIRAL SUBSTANCES

R. V. Kirsanova, P. A. Zhukova  
(Scientific Supervision by  
Senior Scientific Colleague  
V. A. Tsyganov)

The search for effective prophylactic and therapeutic means to use against virus diseases is an important contemporary problem.

The literature contains reports on tests in vitro and in vivo of the antiviral action of a number of antibiotics obtained from the actinomycetes: oxytetracycline [1], actinomycin D and auratin<sup>1</sup> [2], violarine [3], niromycins<sup>1</sup> [4], and others. However, in medical practice antibiotics are not used against medium and fine viruses because of their weak activity or high toxicity for man and animals.

The actinomycin 1985/11, which is active with respect to influenza viruses, was isolated from chernozem soil from Moldavia in 1961 at the Research Laboratory of the Leningrad Scientific Research Institute of Antibiotics. The antiviral properties of actinomycetes 1985/11 were checked by the method of monostratal

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<sup>1</sup>Transliterated Russian form; no English equivalent in available resources - Translator.

culture of tissues of fibroblasts from human embryos and by the method of chick embryos [5]. The liquid culture medium from actinomycetes 1985/11 inhibits the development of the para-influenza Sendai virus in various doses - 10, 100, and in individual cases 1,000 AU of the virus. With preliminary introduction of the liquid culture medium 3-4 hours prior to infection of the cells by the virus inhibition of the cytopathological action of the Sendai virus is observed to the fifth day. By experiments on large embryos it was established that the liquid culture medium from actinomycetes suppresses the development of influenza infection (strain PR-8).

The liquid culture medium from actinomycetes 1985/11 is non-toxic or slightly toxic for large embryos and the tissue culture. In some experiments toxicity of the cultural fluid toward the tissue culture was manifested in dilutions of 1:10 and 1:100.

The goal of this work is to describe actinomycetes 1985/11 - the producer of an antiviral antibiotic.

Actinomycetes forms a branching nonseptate mycelium and bushy spiral sporangia with 0.5-2 turns. The spirals are rarely observed only on a Czapek medium with starch or potato agar. Under the electron microscope the spores have the form of short rods or ovals with a smooth surface.

The culture grows well on Czapek agar with glucose. The aeromycelium is gypseous or weakly velvety. It has a grayish or violet shading of color. The substrate mycelium is brown; there is no soluble pigment. On organic medium No. 2 with agar the culture grows moderately well with a powdery or velvety gray and white aeromycelium, which is sometimes absent. On organic media a soluble tobacco-brown pigment is formed.

Actinomycetes 1985/11 grows on cellulose; it liquifies gelatine, coagulates milk, hydrolyzes starch, forms hydrogen sulfide,

does not reduce nitrates, and does not invert saccharose. Actinomycetes is a good assimilator of arabinose, rhamnose, mannitol, and sodium citrate from sources of carbohydrate.

During a check of the antagonistic properties of the 1985/11 culture by the method of agar blocks, activity against gram-positive bacteria, yeast, and fungi was revealed.

Investigation of the acetone extract from the mycelium by the paper chromatography method in 10 different solvent systems showed the presence of no less than 2 different antibiotics - antibacterial and antifungal. The separation of the antibiotics into three systems is particularly marked: n-butanol, saturated with water (Rf, 0.13 and 0.94); aqueous solution of  $\text{NH}_4\text{Cl}$  (Rf, 0.91 and 0); n-butanol - acetic acid - water (Rf, 0.12 and 0.95).

In terms of morphological, cultural, and antibiotic properties, actinomycetes 1985/11 belongs to the species Act. griseus Krainskiy 1914 [6]. It has been established that certain strains of this species form antiviral antibiotics: antimycin, phagolessin, griseoviridin, etc. [7]. Study of the antiviral antibiotic Act. griseus 1985/11 will be continued.

#### Conclusions

1. Act. griseus 1985/11, possessing inhibiting properties with respect to the Sendai para-influenza virus and influenza virus A (strain PR-8) in experiments on tissue cultures and large chick embryos, was isolated and studied.

2. Act. griseus 1985/11 possesses antibiotic action on gram-positive bacteria, yeast, and fungi. The culture is a producer of no less than two antibiotics - an antibacterial and an antifungal.

3. The liquid culture medium of Act. griseus 1985/11 is weakly toxic for the tissue culture and chick embryos.

Further study of the antiviral properties of Act. griseus 1985/11 in animal experiments would appear to be warranted.

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