AD NUMBER

AD815356

NEW LIMITATION CHANGE

TO

Approved for public release, distribution unlimited

FROM

Distribution authorized to U.S. Gov't. agencies and their contractors; Critical Technology; DEC 1965. Other requests shall be referred to US Army Biological Labs., Fort Detrick, Frederick, MD 21701.

AUTHORITY

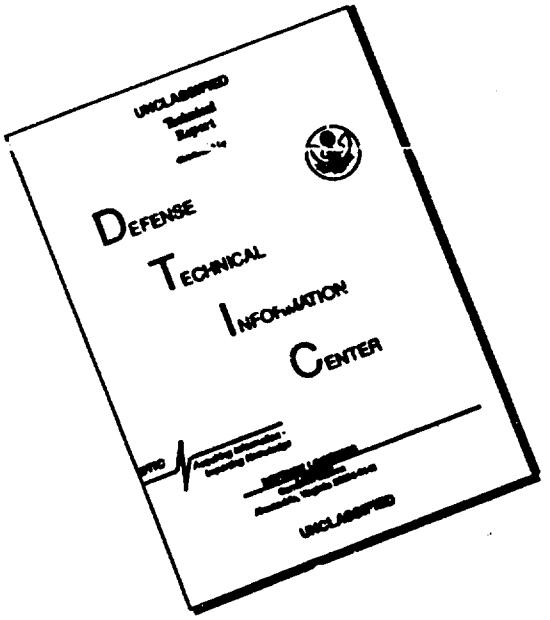
SMUFD/Fort Detrick ltr dtd 15 Feb 1972

THE USE OF SYNTHETIC PREPARATIONS AS THE COLLOIDAL COMPONENT OF THE DILUTING FLUID IN ANTIPLAGUE VACCINE

Translation No. 1715

DECEMBER 1965

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

THE USE OF SYNTHETIC PREPARATIONS AS THE COLLOIDAL COMPONENT OF THE DILUTING FLUID IN ANTIPLAGUE VACCINE

Following is the translation of an article by V. V. Shunayev, M. P. Krasikova, Ye. S. Valyayeva, M. F. Shostakovskiy and F. P. Sidelkovskaya, Alma-Ata, Institute of Organic Chemistry, AN USSR, Moscow, published in the Russian-language periodical Materialy Nauchnoy Konferentsii po Prirodnoy Ochagovosti i Profilaktike Chumy (Materials from the Scientific Conference on the Natural Focalness and Prophylaxis of Plague) Alma-Ata, Feb., 1963, pages 268--270. Translation performed by Sp/7 Charles T. Ostertag, Jr.

The survival of microorganisms in the process of drying and storage depends on many factors. Of primary concern are the biological peculiarities of the microbe and its surrounding medium, the regimen of drying, and the physical-chemical conditions under which it is stored following drying.

The drying medium which is accepted at the present time in the technology of production of live antiplague vaccine has a number of actual deficiencies. They are connected with the properties of one of the components of this medium -- gelatin. On the one hand, the gelatin which is used in the production of vaccine is considerably contaminated with microflora, including sporiferous. At the same time, gelatin due to its properties is not subject to prolonged sterilization under pressure, since under these conditions it transforms into another of its conditions --galactose. On the other hand, gelatin as a component of the drying medium protects the live microbial cells only during the process of drying, but does not possess this property during the further prolonged storage of the prepared vaccine, and especially during the summer air temperatures.

As a component of the drying medium in the production of dry live anti-plague EV vaccine we decided to use a polymer from the group of vinyl compounds -- polyvinylpyrrolidone. The preparation was synthesized by M. F. Shostakovskiy and F. P. Sidelkovskaya.

We studied the effect of 6% vinyl compounds (symprol, hemodez) on the growth qualities of the EV vaccine strain. It was established that these preparations do not possess a bactericidal or bacteriostatic action for the plague microbe. After this verification we investigated several drying media simultaneously: 6-percent synprol with 40-percent saccharose,

3-percent synprol -- 40-percent saccharose, 3-percent hemodez -- with 40-percent saccharose, and as a control the ordinary medium -- 6-percent gelatin with 40-percent saccharose. Then we studied the survival ability of series of vaccine during the process of its storage at various temperatures.

As a result of the preliminary work conducted on testing synprol and hemodez as components of the drying medium for antiplague vaccine, we arrive at the following conclusions:

1. Preparations from the group of polyvinylpyrrolidone (hemodez and synprol) do not exert a bactericidal or bacteriostatic effect on the vaccine strain of the plague microbe.

2. Synprol and hemodez may be used as the colloidal component for the drying medium in the production of the EV antiplague vaccine, since in the process of drying they protect the microbial cells from death no worse than gelatin.

3. In the process of lengthy storage of vaccine at room temperature, synprol protected it from death considerably better than gelatin. After nine months of storing the vaccine at 20--25°, in the test series no less than 12% of live microbial cells were preserved, and in the control series with gelatin -- all told 0.6%.

We are carrying out a further study of the feasibility of using polymers as components of the medium for the drying and storage of the EV antiplague vaccine.