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OBSERVATIONS ON THE LYSIS OF PLAGUE CULTURES IN RELATION TO THE SPECIES OF BACTERIOPHAGE USED


As is known, strains of the plague microbe are subject to lysis not only by plague, but also by pseudotuberculosis bacteriophage.

For a comparative study of the nature of lysis of plague microbes under the action of each of these bacteriophages we inoculated broth with a culture of the plague microbe, strain EV or 265 (with an attenuated virulence), with a calculation of 1,000 microbial bodies per 1 ml of broth. Into the broth tube we added plague or pseudotuberculosis bacteriophage (diagnostic polyvalent, prepared by the Central-Asian Scientific-Research Antiplague Institute) until its content in the medium was at a titer of 10^6. In order to suppress the action of the bacteriophage we added the neutral red dye to the medium after a specific interval of time. In 15 minutes following the addition of the dye inoculations on agar were made for determining the viable microbial cells in a unit of volume, with a subsequent colony count.

In the broth tubes to which pseudotuberculosis phages had been added, as well as in the tubes without it (the control), the content of live microbial cells during the first hours following inoculation did not differ essentially from the initial content. After 24 hours the amount of viable organisms was found to have increased by 5--10 times both in the cultures containing pseudotuberculosis phages and in the control.

After 48 hours and later the content of viable microbial cells in the medium with the pseudotuberculosis bacteriophage was considerably below that in the control, but still exceeded their original number by tens and even hundreds of times. Even after longer intervals the complete lysis of P. pestis in the tubes containing pseudotuberculosis phages did not come about.

The lysis of cultures under the influence of plague bacteriophage took place differently. Already in 30 minutes following inoculation there was preserved in the broth only 1/5 -- 1/15 of the viable cells, and in 24 hours and later the isolation of individual microbial cells was possible only in isolated cases.