

# THE EFFECT OF ORGANOCHLORINE PESTICIDES (OCPs) POLLUTION ON THE ANTIBIOTIC RESISTANCE OF *BACILLUS ANTHRACIS*

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**Background and Aims:** An increasing rate of microbial resistance is generally associated with the misuse and over use of antibiotics, yet the effect of environmental factors on antibiotic resistance of soil - zoonotic - anthropogenic microbes, primarily, the effect of organochlorine pesticides (OCPs) remains unstudied.

**Objective:** To study the effect of OCPs pollution on antibiotic resistance of *Bacillus anthracis*.

**Materials and methods:** 137 strains of *Bacillus anthracis* isolated from biological media (carbuncle and the blood samples of patients) and 32 samples isolated from the soil were subjected to analysis. Of them, 36 samples of biomedica were taken from urban area, 86 – from “pesticide” zone and 15 – from ecologically clean area and 9, 19, 4 soil samples, respectively.

Antibiotic response of microbes to 12 antibiotics (gentamycin, Biseptol, ampicillin, chloramphenicol, streptomycin, penicillin, rifampin, ciprofloxacin, doxycycline, cephalixin, Amoksiklav and ophloxin) was evaluated by disco-diffusion method.

**Results:** *Bacillus anthracis* was found to be resistant to gentamycin: in urban area - 33.3%, pesticide zone - 36% and 18.75% - ecologically clean area; Biseptol - 30.6%, 34.9 and 6.25%, respectively; ampicillin – 50%, 50% and 12.5%; chloramphenicol-36.1%, 29.1% and 18.75%; streptomycin- 13.9%, 9.3% and 12.5%; penicillin- 19.4%, 16.3% and 6.25%; rifampin - 8.3%, 4.6%, and 6.25%; ciprofloxacin - 8.3%, 4.6% and 6.25%; doxycycline - 8.3%, 1.1%, and 0%. At the same time, low resistance was found in 11.1%, 8.1% and 12.5% to cephalixin; in 8.3%, 4.7% and 12.5% to Amoksiklav and in 5.6% 5.8% and 12.5% to ophloxin. As for soil samples, *Bacillus anthracis* isolated from the soil contaminated by organochlorine pesticides was found to be resistant to doxycycline, cephalixin, Amoksiklav and ophloxin in 5%-15.8%.

**Conclusions:** Thus, organochlorine pesticides are thought to be one of the major causes of high antibiotic resistance of soil - zoonotic - anthropogenic microbes and *Bacillus anthracis*.