prevent the adverse effects of urbanization on the reproductive health of young people as a socio-economic factor and an important condition for the development of society.

SCREENING OF POLYHYDROXYALKANOATE PRODUCERS AMONG *BACILLACEAE* FAMILY BACTERIA PROMISING FOR THE CREATION OF BIODEGRADABLE PLASTIC

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In challenging environmental conditions, some bacteria can produce polyhydroxyalkanoates (PHAs), biodegradable biopolymers that take the form of a lipid inclusion structure. Given that they possess traits that are comparable to those of synthetic polymers manufactured from petrochemicals, PHAs may be utilized as a resource for bioplastics production. Due to their biodegradability, biocompatibility, and lack of toxicity, PHAs have been suggested for use as biological control, medication drug carriers, and artificial organ remodeling in the aquaculture and healthcare industries. They can be used to shield plants from harmful external factors in the agricultural industry in a form of shade meshes, clamps, and geomembranes. The *Bacillaceae* family bacteria provide a substantial source for the industrial production of PHA due to their prevalence in nature. They are well-recognized for improving crop growth, offering protection from phytopathogenic microorganisms, remediating soil, and rebuilding soil microbial communities. The study aimed to conduct a screening of the *Bacillaceae* family bacteria to determine PHA-producing strains promising for utilization in both agriculture and medicine.

The screening was performed utilizing 230 strains from the working collection of the Antibiotics department of the D. K. Zabolotny Institute of Microbiology and Virology of the NASU. The strains were cultivated on the PHA screening culture medium of the following composition (g/l): peptone – 3.25, NaCl – 2.5, yeast extract – 0.75, glucose – 20, agar-agar – 15, pH – 7.4. Nile blue stain DMSO solution was added to the medium to a final concentration of 0.1 μg/mL. Following 24-h cultivation the colonies were subjected to UV light. The presence of fluorescence indicated PHA synthesis. GC-MS analysis was performed to evaluate the composition of PHAs produced on the King A medium, as described in Mohandas et al., 2018.

Out of 230 strains analyzed, 26 strains were shown to be PHA producers. The area and intensity of exhibited fluorescence differed among the strains suggesting varying levels of PHA biosynthesis. Out of the 26 strains, 5 bacterial colonies developed pigmentation following UV treatment. Dark, red, and yellow pigmentation was observed, which falls in line with the previous research regarding the chromogenicity of the *Bacillaceae* family bacteria. To extract and analyze the content of PHA produced, we selected 6 strains showing the brightest fluorescence, namely, *Bacillus pacificus* TrM 3_1 and *Priestia endophytica* strains CHAES 2_3, Tr 1_8, Eg $S2_1$, BZ3, A, CHAES 3_4, 5908, 5910, 7515, EG $S2_3$, and CHAES 5_4. Gas chromatography-mass spectrometry analysis indicated that the strains selected

synthesize PHA of a homopolymer nature. Thus, the main component of the studied compound was butanoic acid. However, the levels of biosynthesis varied greatly among the strains. The highest amount of PHA was produced by *P. endophytica* CHAES 2_3 (0.99 g/l). The strains P. *endophytica* BZ3, Tr 1_8, and 7515 also produced a significant amount of PHA, which amounted to 0.94, 0.93, and 0.88 g/l, respectively. The strain *P. endophytica* A synthesized the least amount of PHA (0.13 g/l).

Thus, the research confirmed the *Bacillaceae* family bacteria's ability to synthesize PHA polymers. The results indicated PHA accumulation levels vary in different *Bacillaceae* strains. However, their capacity to synthesize polyhydroxyalkanoates offers a vast area of research into the use of bacilli-produced bioplastic in both agriculture and medicine. Future research could study the effect of the cultivation conditions on the PHA production rate by bacteria of the *Bacillaceae* family.

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THE INCIDENCE OF FOOD-FOOD BOTULISM IN UKRAINE

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Introduction. Human foodborne botulism is a dangerous but relatively rare disease caused by the toxin of the bacterium *Clostridium botulinum*. The reproduction of bacteria and the accumulation of toxins is possible in anaerobic conditions, which are created in canned food products if the canned food production technology is not followed. Spores of *C. botulinum* can be neutralized by sterilizing the product at a temperature of 120°C, which is maintained in food processing plants but is difficult to achieve in home canning. The lethal dose of botulinum toxin when consumed is 1000 ng/kg, making it one of the most powerful natural poisons. For the development of the disease, the entry of the toxin into the body is critical, and not the bacteria as such. In this work, only cases of foodborne botulism are considered, without considering other forms of human botulism (wound botulism, infant botulism, inhalation botulism and botulism as a complication after Botox injections).

Materials and methods. For the work, the data on infectious diseases of the population of Ukraine of the Public Health Center of the Ministry of Health of Ukraine for 2017–2020 were used.

Results. In the structure of food products as factors of botulism transmission, the share of botulism cases caused by meat products, which began to decrease in the 2000s, remains at the level of 33.15% compared to 48.02% in 1955-1985. Accordingly, the share of botulism cases caused by fish products is increasing, but not their absolute number. Botulism caused by mushroom preservation has wide fluctuations, 4-5 cases per year in 2017-2018, 10 cases in 2019, only 2 cases in 2020,