

SYNTHESIS OF FLUORESCENT PIGMENTS BY BACTERIA OF THE GENUS *BACILLUS*

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According to the literature, in most cases, bacteria of the *Bacillus* genus are not characterized as microorganisms capable to synthesize pigments. However, there are several references about the pigments of these bacteria, mostly, melanins and carotenoids. There are also some reports about *Bacillus* strains that have fluorescent pigments. The role and biological properties of these pigments remain poorly understood. Therefore, they are interesting for research.

The aim of the work was the isolation of the pigmented bacteria of the *Bacillus* genus from diverse geographical areas and ecological niches and to establish the regularities of their distribution.

The objects of the study were bacterial strains of the *Bacillus* genus, capable of synthesizing pigments. Cultivation of *Bacillus* strains was carried out on LB, TSA and Gause media at 37° C for 24-48 hours. Identification of bacteria was performed by morphological, cultural, physiological, and biochemical characteristics, and by their fatty acid content. 177 specimens from different geographical areas (Myanmar, Israel, Ukraine, India, Slovakia, UAE, Egypt, Turkey, Ecuador, Thailand) and ecological niches (soil, phylloplane, aquatic ecosystems, GIT of animals and birds) were examined, and 703 strains of *Bacillus* genus were isolated. It was found that 13.5% of all isolates were able to synthesize pigments, and 43% of them produced more than one type of pigments. The colonies of pigmented strains were colored pink, yellow, dark brown and orange. Two groups of the *Bacillus* strains had fluorescent pigments. Some of the pigmented strains synthesized several types of pigments simultaneously or stage by stage along the cultivation. Other *Bacillus* strains synthesized different pigments depending on the conditions of cultivation and the medium type. Producers of the dark and melanin pigments were the most common (17 and 16% of the total pigmented strains, respectively). Producers of the yellow and red pigments were more rarely isolated, and producers of the yellow fluorescent pigment were the rarest. Producers of the yellow and melanin pigments were the most common strains that synthesized several pigments. Only a small number of strains were able to synthesize three types of pigments simultaneously.

Thus, bacteria of the genus *Bacillus* are capable to produce a wide spectrum of pigments: pink, yellow, dark and orange. Correlation between the ability of *Bacillus* strains to synthesize pigments and geographical area and/or ecological niche of their origin was marked.

