SOME PLANT GROWTH-PROMOTING ACTIVITIES OF ENDOPHYTIC BACTERIA ISOLATED FROM CERATOIDES EWERSMANNIANA

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ABSTRACT
This article presents information about the role of endophytic microorganisms residing in the internal tissues of plants in the life of plants, as well as details on the activity of certain enzymes produced by endophytic bacteria isolated from the Ceratoides ewersmanniana plant, which is widely distributed in the arid regions of Uzbekistan.

KEYWORDS: Endophyt bacteria, Ceratoides ewersmanniana, enzymatic activity, IAA, ACC.

INTRODUCTION

In recent years, the consequences of sudden changes in the climate, especially the global warming of the air temperature, have been manifested in the form of a sharp increase in the extent of drought and salinity. At this point, the fact that some plants in the earth's fauna continue to grow even under the influence of stress factors invites experts to pay special attention to research aimed at deeper research of these plants. According to scientific sources, the microflora present in them and the processes carried out through them are among the important factors that determine the resistance of plants to drought and salinity. Therefore, the development and implementation of innovative technologies based on the use of endophytic microorganisms in improving soil fertility, increasing productivity and protecting crops from diseases is of great importance.

Endophytes are a large reservoir of undiscovered genetic diversity. The species composition of endophytic microorganisms and the frequency of infection differ depending on the host plant type, plant growth stage, tissue type, age of host plant organs or tissues, and plant location. Usually, a few species dominate the endophyte community, and most species are rare. The distribution of rare and random species is more influenced by the factors of the area where they live and the external environment than the host plant [1; pp. 267–289, 2; p. 1538]. Endophytic fungi living in many plant internal tissues are not directly transmitted from generation to generation of the plant, but horizontally colonize the uninfected internal tissues of neighboring plants by producing conidia or spores in plants. Therefore, in order to colonize the plant tissues, it has to compete with the existing microflora inside it. Alternatively, some endophytes grow intracellularly in the above-ground parts of plants and are transmitted vertically through seeds. Endophytes are microorganisms (bacteria, fungi) capable of penetrating the internal tissues of plants and spend most of their life in this environment [3; pp. 293–320, 4; 1-23 pp.].

In many studies, the possibilities of extracting various enzymes by endophytic microorganisms are studied. In general, endophytes use the same enzymes to colonize the host cell, for example, cellulase, pectinase, etc. From the research carried out in the following years, it became known that enzymes released outside the cell include protease, amylase, cellulases, pectinase, phytase, esterase, ASK diaminase, lipase, asparaginase, protease, etc. [5; pp. 2314-2326, 6; pp. 95-110]. During our research, we isolated endophytic bacteria with different activities from the internal tissues of the Ceratoides ewersmanniana plant. Various properties of these bacteria that serve to stimulate the growth of plants have been identified. For example, IAA, ACC, siderophore production, N fixation, phosphorus decomposition properties and various enzymatic activities were determined. In particular, when studying the enzymatic activities of the 4 most active bacterial strains, Priestia megaterium CrEw1004, Pseudomonas putida CrEw 1015, Bacillus subtillis CrEw1018, Brevibacillus parabrevis 1021, the most active bacterial strain Priestia megaterium CrEw1004 is amylase, protease, catalase, cellulase, gelatin hydrolysis, lipase and lecithinase activities were demonstrated to be present. It was also found that Pseudomonas putida CrEw 1015 strain has amylase, protease, catalase activities, Bacillus subtillis CrEw1018 and Brevibacillus parabrevis 1021 strains have amylase and protease activities.

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