عنوان مقاله:

Screening of L-asparaginase producing bacteria from farms soil samples

محل انتشار:

اولین همایش منطقه ای دستاوردهای نوین و پژوهشهای دانش بنیان در میکروبیولوژی و بیوتکنولوژی (سال: 1401)

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خلاصه مقاله:

Introduction: One of the important achievements in the pharmaceutical and medical industry is the useof the L-asparaginase enzyme as an anti-cancer drug. Because tumor cells, especially lymphoid cells,need large amounts of L-asparagine amino acid for rapid growth and malignancy. L-asparaginase, whichbelongs to the group of amidase enzymes, can break down L-asparagine into aspartate and ammonium.This enzyme is used to treat acute lymphoblastic leukemia (ALL) due to its ability to inhibit proteinbiosynthesis in lymphoblasts. However, despite the wide applications of asparaginase in thepharmaceutical and medical industry, there are still major problems with the use of this enzyme. Becauseit has been determined that part of the side effects of using asparaginase can be due to its glutaminaseproperties. Research shows that this enzyme is present in many animals, microorganisms, and plants. Butmicroorganisms are the most suitable natural source for the production of asparaginase due to their abilityto produce high amounts of the enzyme. Therefore, considering the importance of medicinalasparaginases prepared from bacterial sources, this research aims to find L-asparaginase-producingbacteria in soil samples collected from the farms of Shushtar city.Methods: In this research, in order to screen L-asparaginase-producing bacteria, several samples of soilfrom agricultural farms (palm, alfalfa, corn, and rice) of Shushtar city located in Khuzestan province werecollected and studied. First, primary isolation of bacteria was done on Nutrient Agar culture medium andthen the obtained strains were cultured on M۹ specific medium. Colonies producing L-asparaginase wereselected based on the formation of a pink halo around the colony, and finally, to further study the enzymeactivity of the selected colored colonies, L-asparagine was used as the substrate.Results: The results obtained in this research show that among the studied soil samples, only alfalfa farmsoil contained L-asparaginase-producing bacteria.Conclusion: Considering the isolation of asparaginase-producing bacteria from the soil of alfalfa fields,more studies will be conducted in the future in order to accurately identify the isolated strains, as well aswider screening to obtain new asparaginases with potential benefits from natural sources. Therefore,searching for asparaginase-producing microorganisms in the soil is one of the main ways to obtain anenzyme with ideal therapeutic properties.

کلمات کلیدی:
Anticancer property, L-asparaginase, Screening