عنوان مقاله:

Isolation and screening of novel local yeast strains for L-asparaginase production

محل انتشار:

بیستمین کنگره بین المللی میکروب شناسی ایران (سال: 1398)

تعداد صفحات اصل مقاله: 1

نویسندگان:

Neda Fazeli - *Department of Microbial Biotechnology, Science and Research branch, Islami Azad University, Tehran, Iran*

Nayyereh Alimadadi - *Microorganisms Bank, Iranian Biological Resource Center (IBRC), ACECR, Tehran. Iran*

Shaghayegh Nasr - *Microorganisms Bank, Iranian Biological Resource Center (IBRC), ACECR, Tehran. Iran*

خلاصه مقاله:

Introduction and Objectives: L-asparaginase is an enzyme with great potential for biotechnological applications including the pharmaceutical and food industries. Investigation of novel L-asparaginase producers may advance the commercial development of the enzyme. In this study, some local yeast strains were isolated and screened for L-asparaginase production. Materials and Methods: Ten soil samples were collected and serially diluted on Rose Bengal Chloramphenicol Agar medium. The isolated yeasts were identified by sequencing of the D1/D2 domain of the LSU rRNA gene. The isolates and ten identified yeast strains obtained from Iranian Biological Resource Center (IBRC) were spot-inoculated on modified Czapek agar media containing 0.009% phenol red or 0.008% bromothymol blue. After incubation at 25 °C for 72 h, the diameter of the zones was measured. Positive strains were cultured on the modified Czapek broth for quantitative estimation of L-asparaginase production. After incubation at 25 °C for 4 days, enzyme activity was determined by measuring the amount of ammonia formed by nesslerization and expressed as International Unit of L-asparaginase activity per volume of culture (IU/ml). Results: Three yeast strains were isolated from three soil samples and identified and designated as Rhodotorula sp. F1, Rhodotorula sp. F2 and Sarocladium sp. F3. These strains and five strains obtained from IBRC including Aureobasidium mangrovei IBRC-M 30265, Fereydounia khargensis IBRC-M 30116, Coniochaeta iranica IBRC-M 30187, Graphiola fimbriata IBRC-M 30158 and Starmerella orientalis IBRC-M 30204 showed positive reaction in the plate assay. In liquid culture, L-asparaginase production by the strains were estimated at the range of 0.08–1.68 IU/ml. The strains Sarocladium sp. F3 and Fereydounia khargensis IBRC-M 30116 showed the highest production level of 1.68 and 1.11 IU/ml, respectively. Conclusion: In the present study, seven local L-asparaginase producing yeast strains were reported. Among them, five yeast species were introduced as L-asparaginase producers for the first time.

کلمات کلیدی:

Isolation, L-asparaginase, screening, yeast