

عنوان مقاله:

A Potent Antifungal Activity by the Marine *Streptomyces albidoflavus* sp. ADR₁₀ from the Caspian Sea Sediment: Optimization and Primary Purification

محل انتشار:

مجله منابع ژنتیک, دوره 9, شماره 2 (سال: 1402)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Ruqayah Alqaraawee - *Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran*

Simindokht Afra - *Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran*

Ahmad Asoodeh - *Department of Chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran*

Ali Makhkdoumi - *Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran*

خلاصه مقاله:

Fungal infections are an evolving public health challenge due to their antimicrobial resistance and the growth of immunocompromised populations. Aquatic environments, the largest ecosystem on earth, are recently considered as a source for the production of bioactive compounds. Marine actinomycetes are considered for their potential to produce novel bioactive metabolites like antifungal compounds. In this study, strain ADR₁₀ was obtained from the sediment sample of the Caspian Sea and its 16S rDNA gene sequence analysis suggested that the isolate belongs to *Streptomyces albidoflavus*. The preliminary cross-streak and double-layer agar screening revealed that the isolate has potent activity against pathogenic fungi, i.e. *Aspergillus niger*, *Candida albicans*, *Fusarium oxysporum*, and *Penicillium crustosum*. One-factor-at-a-time and Response surface methodology (RSM) was employed to evaluate the effects of six parameters (carbon source, initial pH, inoculation volume, NaCl concentration, nitrogen source, and temperature) on the production of antibiotics in the basal starch casein broth medium. The maximum antibiotic activity was achieved at the initial pH 7.05, sucrose 1.17 g l⁻¹, malt 0.2 g l⁻¹, temperature 30 °C, inoculation size 5.0% v/v, and NaCl 1% w/v after 121.1 hours. Through the optimization experiments, antifungal activity was enhanced 2.7-fold. Ethyl acetate showed the highest antibiotic extraction capacity from the fermentation media compared with dichloromethane, hexane, and chloroform. The preliminary purified antibiotic by thin layer chromatography (ethyl acetate/ mobile petroleum phase) showed a more significant growth inhibition zone than nystatin (100 µg mL⁻¹) against *Candida albicans*. This study underlines the potential of the marine actinomycete for the identification of novel antifungal agents.

کلمات کلیدی:

Actinomycetes, Antibiotics, Caspian Sea, Fungi, *Streptomyces albidoflavus*

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1878024>



