

## Isolation, Identification and Phytase Production Capacities of the Marine Derived Fungal Strains from Mediterranean Sponge and Sediment Samples

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**Aim of the study:** Marine microbial diversity presents a rich source for new microorganisms that have various biological activities. In recent years many studies have been conducted on the marine derived bacteria and archaea. However, very little is known about the marine derived fungal (MDF) strains. In this study, we aimed to isolate and identify MDF strains from sponge and sediment samples that are collected from Aegean and Mediterranean Seas. Furthermore, since the some terrestrial fungal isolates are the commercial producers of the phytase enzyme, we also aimed to investigate the phytase production capacities of the isolates.

**Material and Methods:** Sponge and sediment samples were collected by SCUBA diving within the scope of TUBITAK SBAG 109S361 project and brought to the laboratory in the cold chain in cold boxes. Isolation was carried out using 4 different modified media; M1, M6, Malt Extract agar and Medium A. Isolates were identified using polyphasic approach. Phenotypic characteristics and ITS sequence analysis used for identification purposes. Since the some terrestrial fungal isolates are the commercial producers of the phytase enzyme, phytase production capacities of the isolates were also investigated. Extracellular phytase activities of the isolates were determined using modified phytase screening medium (MPSM). The clear halo surrounding the colonies in MPSM were evaluated as a semi-indicator of the phytase activity.

**Results:** A total of 110 marine derived fungal strains have been isolated from marine sponges (73 isolates) and sediment samples (37 isolates) respectively. ITS sequences of the isolates were deposited in the GenBank. *Penicillium* sp. (%56), *Cladosporium* sp. (%20) and *Aspergillus* sp. (%11) strains were the most prevalent in the samples. It is determined that 45 of the 110 strains (40.9%) were in the phytase production capacity. Furthermore, 31 of the 73 sponge isolates (42.46%) and 15 of the 31 sediment isolates were present activity on the MPSM medium. According to the best of our knowledge, this study describes the isolation and identification of marine derived filamentous fungal strains for the first time. Furthermore, phytase screening results demonstrates that MDF strains present a rich microbial source for phytase production.

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**Keywords:** Phytase, Marine derived fungi, ITS-PCR, *Sponge*, *Sediments*, Biodiversity.