Proceedings

Use of Olive Mill Wastewater as Substrate for Laccase Production by Fungi †

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Abstract: The annual Olive oil production in Mediterranean countries is estimated to over 95% of the world cultivation. Nevertheless this process generates large amounts of wastes including Olive Mill Wastewaters (OMW) with approximately 3×10^7 m^3 per year which pose a critical problem for environment due to their colossal concentration of salinity, organic matter and phenolic compounds responsible of the phytotoxicity and microbial growth inhibitory effects. For these reasons, most attention has been agreed to determinate the best strategy to reduce phenol content of OMW. Laccases were recognized as main enzymes implicated in the degradation of phenolics in OOW alongside of this the use of halotolerant fungi offer potential applications for production of enzymes able to retain good activity in saline environments. The aim of this work was to investigate the ability of halophilic fungi isolated from saline soil to produce laccase and degrade OMW on agar plate method. For this purpose, 23 strains of fungi are isolated from the sebkha's soil of Ain'Ezzmoul, Algeria on PDA plates. Same medium supplemented with Guaiacol was used to investigate the laccase production. Then the three positif laccasic strains obtained (GS7, GS15 and VS1) were examined for their ability to grow and decolorize OMW. Therefore, a three phasic OMW were collected and prepared with several concentrations and solidified with 2% Agar. The strains GS7, GS15 and VS1 respectively were able to grow at OWW up to 50%, 40% and 100% but only GS15 showed a complete decolourisation halo. This latter was tested to laccase production on OMW liquid medium and shows enzymes activities 61.05 U and 67.72 U on respectively 10% and 20% of unsupplemented OMW.

Keywords: Olive oil mill ; phenol ; laccase ; fungi