

## Optimization of the Culture Medium, Incubation Period, pH and Temperatures for Maximal Dye Bioremoval Using *A. Fumigates*

**Authors :** Wafaa M. Abd El-Rahim, Magda A. El-Meleigy, Eman Refaat

**Abstract :** This study dealing with optimization the conditions affecting the formation of extracellular lignin- degrading enzymes to achieve maximal decolorization activity of Direct Violet dye by one fungal strain. In this study *Aspergillus fumigates* fungal strain used for production extracellular ligninolytic enzymes for removing Direct Violet dye under different conditions: culture medium, incubation period, pH and temperatures. The results indicted that the removal efficiency of *A. fumigatus* was enhanced by addition glucose and peptone to the culture medium. The addition of peptone and glucose was found to increase the decolorization activity of the fungal isolate from 51.38% to 93.74% after 4 days of incubation. The highest production of extracellular lignin degrading enzymes also recorded in Direct Violet dye medium supplemented with peptone and glucose. It was also found the decolorization activity of *A. fumigatus* was decreased gradually by increasing the incubation period up to 4 days. Also it was found that the fungal strain can grow and produce extracellular ligninolytic enzymes which accompanied by efficient removal of Direct Violet dye in a wide pH range of 4-8. The results also found that the maximal biosynthesis of ligninolytic enzymes which accompanied with maximal removal of Direct Violet dye was obtained at a temperature of 28°C. This indicates that the different conditions of culture medium, incubation period, pH and temperatures are effective on dye decolorization on the fungal biomass and played a role in Direct Violet dye removal along with enzymatic activity of *A. fumigatus*.

**Keywords :** *A. fumigates*, extracellular lignin- degrading enzymes, textile dye, dye removing

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