

## عنوان مقاله:

Biotechnological and Industrial Applications of Laccase: A Review

## محل انتشار:

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## خلاصه مقاله:

Laccase is a polyphenol oxidase, highly glycosylated that mainly presents as monomeric proteins with varying mass of 50-90 kDa. This enzyme oxidizes lignin using molecular oxygen which produces water as the only by-product but it shows specificity to broad range of substrates such as phenols including ortho- and para-diphenols, amino phenols, methoxy phenols, polyphenols, polyamines, aryl diamines and ascorbate. Laccase can be found in fungi, plants, insects and bacteria. Laccases are involved in a wide range of biological functions including pigment formation in fungi, ectomycorrhizal symbiosis, metabolism of proanthocyanidins, virulence of pathogen fungi and sexual development. Regarding its unique function it is getting more attention for novel applications in biosensors, microfuel and bioelectrocatalysis. In addition, it is used in food, pharmaceutical and cosmetic, pulp and paper and textile industries. It has especial potential to be used in bioremediation to remove water and soil pollutions resulted from different industries. This has made researchers to produce transgenic plants containing heterologous laccases to be able phytoremediate polluted soil and water resources with chemicals including different organophosphorus pesticides and nerve agents. Additionally, hydroponic culture of these transgenic plants can be considered as an inexpensive approach for commercial production of laccase exploiting rhizosecretion strategy.

## کلمات کلیدی:

Laccase, Fungi, Transgenic Plants, Phytoremediation, Pollution

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