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Review

Recent advancements in bioremediation of dye: Current status and challenges

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14 **Abstract**

15 The rampant industrialization and unchecked growth of modern textile production facilities coupled
16 with the lack of proper treatment facilities have proliferated the discharge of effluents enriched with toxic,
17 baleful, and carcinogenic pollutants including dyes, heavy metals, volatile organic compounds, odorants,
18 and other hazardous materials. Therefore, the development of cost-effective and efficient control
19 measures against such pollution is imperative to safeguard ecosystems and natural resources. In this
20 regard, recent advances in biotechnology and microbiology have propelled bioremediation as a
21 prospective alternative to traditional treatment methods. This review was organized to address
22 bioremediation as a practical option for the treatment of dyes by evaluating its performance and typical
23 attributes. It further highlights the current hurdles and future prospects for the abatement of dyes *via*
24 biotechnology-based remediation techniques.

25 **Keywords:** bioremediation, dye, biodegradation, textile effluents, decolorization, bioreactor

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