Junior Science Communications
Faculty of Applied Sciences, UiTM Shah Alam
https://journal.uitm.edu.my/ojs/index.php/JSC

E-ISSN 2637-0689
Vol 34 2024

Colloquium on Applied Sciences- CAS 2023
17-18 July 2023, Faculty of Applied Sciences, UiTM Shah Alam, Malaysia

Genetically Engineered Bacteria in Bioremediation of Environmental Pollution: A Review

Aniessa Darwina Roslin[a], Tengku Idzzan Nadzirah Tengku Idris[a*]

Structured Abstract

Background: Industrial revolutions are the primary force powering society's economic and technological advancement. However, the thriving industrialisation and uncontrolled increase of current production units led to widespread environmental pollution as a result of increased waste discharge that is full of harmful, dangerous, and cancer-causing substances. Due to the ongoing appearance of new resistant contaminants, physicochemical-based remediation methods were considered expensive, causing a secondary disposal issue and continuing to fall short when mitigating pollution. For these reasons, microbial bioremediation has become a great option for reducing pollution since it is environmentally beneficial, socially acceptable, and has fewer health risks. Additionally, genetically modified bacteria with a strong ability to remove environmental toxins are frequently used in environmental restoration due to recent advancements in biotechnology and microbiology, making bioremediation more practical and environmentally safe.

Methods: -

Results: -

Conclusion: This review highlighted the examples of genetically engineered bacteria to bioremediate various environmental pollutants, including organic compounds, agricultural chemicals, heavy metals, petroleum and aromatic compounds. Not only that, various molecular techniques involved in bioremediation were explored too. To add up, other potential candidates for remediation such as algae and fungi were explained too for a comprehensive understanding of this topic.

Keywords: Genetically engineered bacteria, bioremediation, environmental pollution, molecular technology, omics technology

*Correspondence: tengkuidzzan@uitm.edu.my

[a]School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia.