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A GREEN TECHNOLOGY FOR BIODESALINATION OF SALINE WATER RESOURCES BY MICROALGAE: A CRITICAL REVIEW

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Abstract

Increasing population, coupled with industrialization and agricultural activities has brought about overuse of freshwater resources, while a mere 0.5 percent of the world's water is available as freshwater. As a result, desalination from other brackish water sources is becoming one of the best ways to overcome water scarcity in the world's water-scarce areas. Salt water contains many contaminants such as, heavy metals, nutrients, fine contaminants and organic pollutants. This type of water must be treated before draining. Compared to other modern saline water treatment technologies, microalgae process is considered environmentally friendly because it does not create any secondary pollutants and is profitable. For this purpose, microalgae must first adapt to salinity conditions and also provide suitable conditions for their growth such as food, proper temperature, proper pH and light intensity. To clarify the issue, this study examined the following: (1) Salinity stress (2) Mechanism of bio-desalination by microalgae (3) Parameters affecting desalination by microalgae. In addition, different variables of efficiency influencing treatment rate, types of photobioreactors used for microalgae growth, current process challenges, and necessary studies for microalgae-based desalination are discussed. Overall, it has been found that biological treatment using microalgae is a simple option for desalination of saline water that can provide inexpensive fresh water with minimal environmental impact.

Key words: adaptation, biological absorption, desalination, microalgae, salinity stress

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