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Wastewater Treatment Using Biotechnological Approach

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Hazardous chemicals are forming at an accelerating rate due to a growing global population, necessitating ecological response. Wastewater management and treatment is a costly operation that needs the right technological integration to make it more practical and affordable. Algae are highly sought-after as potential feedstocks for a variety of applications, such as sustainability of environmental, the generation of bioproducts with high-worth, and the manufacturing of biofuels. One technique to reduce wastewater contamination is microalgae bioremediation. The demand for effective greenhouse gas reduction, wastewater treatment biomass reuse and nutrient recovery, has spurred a major concern in the microalgae use of wastewater treatment. Algal biomass can also be used to produce high-value bioproducts and bioenergy. Researchers from all over the world have investigated the use of microalgae for food additives, biofuels, and the production of bioactive and medicinal compounds. The commercial use of algae is now prohibited by technological and financial constraints, and efficient downstream processes are required to lower production costs. Therefore, using microalgae for both biofuel generation and wastewater treatment simultaneously could be a cost-effective way to solve both problems [1]. A different method is to use native bacteriophages as markers to detect the existence of enteric viruses of human, taking into account the bacteriophages. Native bacteriophages in particular share many characteristics with enteric viruses of human, including composition, size, structure, and replication-related elements. For instance, bacteriophages e.g FRNA have an isoelectric point (IEP) of 3.9and dimensions of about 25 nm and, which are related to those of the enterovirus (human) and hepatitis A virus (both of which have sizes of 22–30 nm and IEPs of 4.0–6.4). (IEP 2.8, 27e28 nm). Importantly, the technology used in bacteriophage assays is the quickest and least expensive for identifying human enteric viruses. Researchers are actively striving to quantitatively examine the link between human enteric viruses and native bacteriophages in order to determine the best indicator and improve prediction accuracy. Nevertheless, contrasting assumptions have emerged from the published investigations. The elimination of human pathogenic waterborne viruses, particularly enteric viruses of human, is a crucial factor to consider when assessing the efficiency of membrane treatment in the production of wastewater and drinking water [2]. An effective method for treating spent water that uses little energy is deammonification, which combines partial nitridation and anaerobic ammonium oxidation. Since the 1990s, when Anammox bacteria were first found, numerous full-scale side stream deammonification units handling high-ammonia used water have been operating successfully. However, there haven't been many reports of this method being utilized extensively to treat municipal waste water with low ammonia concentrations [3].