The functions of Spirulina powder on the enhanced anaerobic degradation of quinoline and indole

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May 5, 2020

Abstract

Large amount of algae has been significantly increased due to eutrophication of water bodies. However, algae is rich in bio-active compounds, such as vitamins, proteins, polysaccharides, unsaturated fatty acids, nucleic acids, minerals and pigments. In the study, spirulina was proved to be an novel and appropriate co-metabolic substance in enhancing the anaerobic degradation of quinoline and indole. When the dosage of Spirulina powder was 1.0 mg/L, reactor showed the highest degradation efficiency, with ratios of 99.77% and 99.57%, respectively. Further, the addition of Spirulina powder led to the increase of MLSS, MLVSS, proteins, and polysaccharides concentration of sludge. Finally, the addition of Spirulina powder resulted in the decrease of Acinetobacter and the enrichment of Aminicenantes, Levilinea, and Longilinea. The reactor with Spirulina powder had richer and more diverse archaea community.

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