Growth Studies of Antarctic Filamentous Algae in Molybdenum

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Driven by the rising anthropogenic activities in subsequent years, relatively high levels of heavy metals have been reported in Antarctica. Heavy metals found through internal pollutions or globally transported via the Southern Ocean, would persist longer in the ice region and adversely affect the local wildlife and aquatic ecosystem. Molybdenum (Mo) is a trace element that has not been widely investigated in relation to environmental toxicity, especially in the cold temperatures. Previous study reported that a cold-adapted native bacterial strains was able to reduce Mo at optimal conditions. Microorganisms such as algae have the potential to degrade heavy metal pollutants naturally through bioremediation. However, it is also important to study the optimum growth conditions of algae required to facilitate the bioremediation process. This study aimed to optimise the conditions required to enhance the optimal growth of an Antarctic algae, *Klebsormidium* sp., through aeration or without aeration and analyse the growth kinetics using the Exponential growth model. Different culture systems, with aeration and without aeration, were used to compare the growth of isolate *Klebsormidium* sp. An exponential phase was achieved on the third day by the *Klebsormidium* sp. culture in both systems. However, algae culture in growth medium showed higher growth rate with aeration compared to those without aeration. Exponential growth model demonstrated no significant difference in the algae growth rate with aeration (0.020 ± 0.0018 h^{-1}) and without aeration (0.020 ± 0.0015 h^{-1}). This study elucidated that the maximal growth of algae in Mo was influenced by various growth parameters, but not affected by different culture systems.

References

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