

混營性微藻利用揮發性有機酸作為主要碳源在油脂累積之研究

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摘要

由於人類的快速發展和石油消耗，能源以及環境污染問題成為21世紀最受社會關注的重大問題。由於微藻具有高的光合效率和脂質含量，使得微藻可製備成生物柴油，相對於傳統的油料作物，藻類為一種具有發展潛力的可再生燃料來源。微藻生產生質柴油和污水處理相結合之技術不但可以減少淡水的使用、微藻培養的額外營養物成本之外，並可將污水中有機物去除。目前厭氧生物處理之產酸發酵後的廢水中的仍然有約60%至70%的有機物殘留。因此，本研究擬自台灣沿海海水中篩選分離出可以利用揮發性脂肪酸當碳源的微藻，並根據18S rRNA 基因序列與其型態特徵鑑定。之後挑選出利用VFAs的*Chlorella pyrenoidosa* G23進一步探討生長及油脂含量的影響。研究綠色微藻*Chlorella pyrenoidosa* G23在不同混營條件下的生長參數和生物化學成分組成與光合自營培養比較。在微藻混營與光合自營培養條件下相比較，微藻混營培養的生長速率、最終藻體濃度和脂質產率顯示較高。因為在混和揮發性脂肪酸培養基中含有促使藻體生長的營養源，因此，當無機培養基與混合揮發性脂肪酸(醋酸、丙酸和丁酸)培養基相比較發現，混合揮發性脂肪酸培養基明顯改善微藻生長及碳水化合物利用。使用厭氧甲烷槽廢水混營培養*Chlorella pyrenoidosa* G23被認為是一種可以減少微藻生產成本的替代方案，因此不需要額外添加昂貴的碳水化合物到培養基。

關鍵詞：揮發性脂肪酸、厭氧甲烷槽廢水、生質柴油

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