利用篩選菌株Serratia marcescens DYU 生產靈菌紅素之研究

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摘 要

靈菌紅素(prodigiosin，PG)，屬於一種天然紅色色素，為 Streptomyces spp.、 Streptoverticillium spp.和Serratia marcesens 、Vibrio psychroerythrus 及Pseudomonas magnesiorubra 等微生物次級代謝產物。近年來，研究指出靈菌紅素具有免疫抑制、抗癌及對某些細菌和真菌有抗生素的效果，將來也可應用開發新型免疫抑制劑及抗癌藥物，亦有研究證實靈菌紅素可以作為海洋環境中有害藻類的生物控制劑，在未來勢必有很大的發展潛力。本研究擬篩選出具生產靈菌紅素能力之菌株。將經過篩選之菌株，利用16S rDNA 鑑定後，證實為Serratia marcescens，並將其命名其為S. marcescens DYU。實驗結果顯示，最適合之碳源及氮源分別為蔗糖(5 g/L)及peptone(15 g/L)，靈菌紅素的最大產量為580 mg/L。將S. marcescens DYU 於pH5.5- 7、30℃、振盪速率為135 rpm 的條件下培養，則靈菌紅素的最大產量可提升至627mg/L。另外，將粗萃取之靈菌紅素經siligel 管柱純化後之樣品，經FT-IR(fourier transform infrared) 進行分析與NMR(Nuclear Magnetic Resonance)分析，證實為靈菌紅素。接著進行靈菌紅素穩定性之探討，結果顯示靈菌紅素對光具敏感性，因此實驗應以避光為條件進行。將靈菌紅素保存在-20℃~25℃可以確保靈菌紅素的穩定性。此外，靈菌紅素會因pH 值不同而呈現不同產物顏色，但不會因此影響產物的濃度。

關鍵詞 : 色素、靈菌紅素、沙雷氏黏質菌

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