Study on the production of prodigiosin by isolated Serratia marcescens DYU

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ABSTRACT

The structure of prodigiosin is a linar tripyrrole which is a typical secondary metabolite produced by Serratia marcesens, Vibrio psychroerythrus, Pseudomonas magnesiorubra, and Streptomyces spp. The characteristics of prodigiosin families were reported characteristics of having not only having antibiotics and immunosuppressant activities, but also given anticancer activity recently.A bacterial strain which had higher prodigiosin producing was isolated, and designated as Serratia marcescens DYU according to its 16S rDNA seguences. The optimization of submerged culture conditions was studied for the production of prodigiosin by Serratia marcescens DYU in a shake culture. Maximum biomass and prodigiosin production of Serratia marcescens DYU were both observed at 30℃ and pH range of 5.5-7. Experimental results suggest that the effect of pH may be related to the amount of prodigiosin. The maximum prodigiosin productivity by Serratia marcescens DYU was about 580 mg/L when medium containing sucrose (5 g/L)and peptone (15 g/L) as carbon and nitrogen source, respectively. Fourier transform infrared (FTIR) analysis indicated that the red product may be a prodigiosin derivative. Nuclear magnetic reasonance (NMR) analysis indicated that the red product was prodigiosin. All the stability analysis of prodigiosin indicated that Prodigiosin needs preservation at -20℃~25℃, it ’s sensitiving to light, so the production of prodigiosin needs prevent the light; at the same time, prrodigiosin was sensitiving to pH,too, the prodigiosin will change it ’s color by various pH value, but won ’t effect the concentration of the prodigiosin.

Keywords : Pigment、Prodigiosin、Serratia marcescens

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