Study on Production of Bioflocculant and Effect of Factors on Flocculation

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ABSTRACT

In this study, the first: we use isolated Bacillus subtilis DYU1 as Bioflocculant (polyglutamic acid, PGA) producer to investigate the effect of agitation speed on the PGA production in a 5-L fermentor. The results suggest that maximum PGA production (12.6 g/L) were obtained under the cultural condition of 37 °C, 300 rpm, 1 vvm and intital pH 8. Analysis with nuclear magnetic resonance spectrometry (NMR) and amino acid identification shows that the B. subtilis DYU1 produced biopolymer mainly possesses the structure of polyglutamic acid (PGA). The second: to investigate the effect of factors on flocculating of bioflocclant (PGA). The PGA produced from Bacillus subtilis DYU1 was found to have excellent flocculating ability for starch wastewater, SiO2 wastewater, activated sludge suspended Chlorella sp. Y8-1 solution (in freshwater). The flocculating activity of PGA in all flocculating the target was markedly stimulated by the addition of trivalent cations Fe3+ or Al3+. Moreover, mechanisms describing the flocculation process with flocculant were proposed based on the experimental observations.

Keywords : Bacillus subtilis DYU1、Bioflocculant、Polyglutamic acid

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