Study on the isolation of native srtains for poly(γ-glutamic acid)production and the flocculation properties of γ-PGA

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ABSTRACT

There are several poly(γ-glutamic acid)-producing strains were isolated form soil in this study. The isolated B which has the maximum yield of γ-PGA was selected to study the suitable conditions for γ-PGA production. The results shown that soluble starch and TSB had to be added in to the media as precursor substrates for the production of γ-PGA with the isolated strain B. In addition, the structure of γ-PGA was verified by various analytic methods, e.g. TLC, GPC, HPLC, FT-IR, and NMR analysis. In this study, the flocculation properties of the γ-PGA prepared from a culture of the isolated strain B were investigated, too. Flocculating activity of γ-PGA in a kaolin suspension was stimulated by the addition of Al3+, Fe2+ and Ca2+ to the suspension. High flocculating activity of γ-PGA was induced in a kaolin suspension by addition of Al3+ or Fe2+ and pH adjustment to the neutral range. Various suspension of activated sludge from petrochemical and textile industry were flocculated by γ-PGA. The suspension solid were removed by γ-PGA when Fe2+ was added and the pHs of the suspensions were adjusted to the neutral range. From these flocculation properties in various suspensions, it may be possible to use γ-PGA as a new biodegradable, harmless biopolymer flocculant. key word: poly(γ-glutamic acid), flocculant, flocculating activity, biopolymer

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