

KARAKTERISASI FENOTIPIK DAN KEMAMPUAN PERTUMBUHAN YEAST BIOFILM PADA BEBERAPA KADAR Mn DAN SULFAT

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INTISARI

Telah dilakukan penelitian sebelumnya dalam pemanfaatan mikroorganisme mereduksi sulfat. Konsorsium mikrobial ditumbuhkan dalam *sulfur reducing bioreactor* dan terbukti mampu mereduksi sulfat. Akan tetapi, belum dilakukan karakterisasi fenotipik konsorsium tersebut, serta tingkat resistensinya terhadap logam Mn dan kadar sulfat tinggi. Penelitian ini dilakukan dengan tujuan untuk mengisolasi dan mengidentifikasi secara fenotipik *yeast* resisten sulfat dan logam Mn yang berasal dari bioreaktor pereduksi sulfat, serta mengetahui tingkat resistensinya terhadap logam Mn dan kadar sulfat. Metode yang digunakan dalam penelitian ini meliputi isolasi, penumbuhan pada berbagai variabel lingkungan (konsentrasi Mn, kadar Sulfat, temperatur, derajat pH), karakterisasi, dan identifikasi. Berdasarkan pertumbuhan strain *yeast* dalam berbagai konsentrasi logam Mn dan H₂SO₄ didapatkan strain IGF2 yang memiliki resistensi tertinggi pada logam Mn sampai 2000 ppm dan pada kadar sulfat tinggi sampai 3000 ppm. Berdasarkan klasifikasi karakter fenotipik, dendogram *simple matching coefficient* didapatkan 3 spesies yang berbeda, sedangkan dendogram dengan metode *jaccard's coefficient* didapatkan 5 spesies yang berbeda. Hasil identifikasi mengindikasikan bahwa strain IGF1, IGF2, IGF3, IGF4 dan IGF5 berturut-turut diduga kuat merupakan anggota spesies *Schizosaccharomyces pombe* (IGF1), *Debaryomyces hansenii* (IGF2), *Pichia anomala* (IGF3), *Candida parapsilosis* (IGF4), dan *Candida parapsilosis* (IGF5).

Kata kunci : karakterisasi, fenotipik, yeast, mangan, sulfat

Phenotypic Characterization and Growth Ability Biofilm Forming Yeast at Various Concentrations of Mn and Sulfate

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ABSTRACT

Previous researches have studied the use of sulfate reducing microorganisms. The microbial consortium were incubated in a sulfur reducing bioreactor and has been proven to be able to reduce sulfate. However, the phenotypic characterization and the resistance level to manganese (Mn) and high concentrated sulfate of the consortium have not been studied. This study was conducted to phenotypically isolate and identify yeast, which are resistant to Mn and high concentrated sulfate, derived from the sulfate reducing bioreactor, as well as their resistance level. The methods used in this study include inoculation in various environments (Mn concentration, sulfate level, temperature, and pH level), characterization and identification. Based on the growth of yeast strains in various Mn and H₂SO₄ concentration, IGF2 strains have the highest resistance to both Mn (up to 2000 ppm) and High concentrated sulfate (up to 3000 ppm), were obtained. Based on phenotypic classification, in jaccard's coefficient dendogram was found five species, and in simple matching coefficient dendogram was found three species. Identification results indicated that strain of IGF1, IGF2, IGF3, IGF4 and IGF5 consecutive allegedly a member of the species *Schizosaccharomyces pombe* (IGF1), *Debaryomyces hansenii* (IGF2), *Pichia anomala* (IGF3), *Candida parapsilosis* (IGF4), and *Candida parapsilosis* (IGF5).

Key words : *characterization, phenotypic, yeast, manganese, sulfate*