HISAS 4
The 4th Hokkaido Indonesian Student Association Scientific Meeting

BIODESULFURIZATION OF DIBENZOTHIOPHENE AND ITS DERIVATES BY *Sphingomonas subarctica* T7b IN THE PRESENCE OF TETRADECANE

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ABSTRACT: The ability of *Sphingomonas subarctica* T7b for desulfurization of tetradecane containing dibenzothiophene (DBT) and its derivates is evaluated. Biodesulfurization activities were carried out by growing and resting cells of *S. subarctica* T7b. All experiments were carried out using oil/water two-phase system, with the oil phase containing 250 mg/l DBT or its derivates in tetradecane. The water phase for growing cells contained mineral salt sulfur free medium, whereas for resting cells, the water phase contained cells suspended in phosphate buffer. At 27^{o}C, growing cells of *S. subarctica* T7b could degrade 80.5% DBT, within 120 h to produce 2-hydroxybiphenyl (2HBP) as a desulfurized metabolite through the selective cleavage of carbon-sulfur (C-S) bonds. The desulfurization activity of the resting cells of *Sphingomonas subarctica* T7b was strongly depended on harvest time and the highest value when the cells had been harvested in the middle of growth phase (85% of DBT was desulfurized). Both the shaking speeds and the volumetric rates were significantly affected by the aqueous-to-oil phase ratio. The resting cells of *S. subarctica* T7b could also degrade 18.2% 4 Hexyl DBT and 9.3% 4,6 dibutyl DBT within 24 h.

KEYWORDS: Biodesulfurization, *Sphingomonas subarctica* T7b, dibenzothiophene, growing cells, resting cells