# UJI KEMAMPUAN ISOLAT BAKTERI TERMOFILIK ASAL KALI GENDOL ATAS PASCA ERUPSI MERAPI DALAM MEREDUKSI LOGAM BERAT TIMBAL (Pb)

## *ABILITY TEST OF ISOLATES THERMOPHILIC BACTERIA OF GENDOL RIVER AFTER THE MERAPI ERUPTION TO REDUCE HEAVY METAL PLUMBUM (Pb)*

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**Abstrak**

Penelitian ini bertujuan untuk mengetahui isolate bakteri termofilik pasca erupsi Merapi 2010 yang dapat hidup pada suhu 55 ºC memiliki kemampuan mereduksi logam timbal (Pb), mengetahui isolate bakteri yang mampu mereduksi logam timbal paling maksimal, mengetahui pengaruh konsentrasi logam terhadap reduksi logam berat timbale serta mengetahui pengaruh lama inkubasi terhadap reduksi logam berat timbal. Penelitian ini merupakan penelitian eksperimen menggunakan isolate bakteri D2 dan D19 asal Kali Gendol Atas pasca erupsi Merapi 2010. Kedua isolate bakte I ditumbuhkan pada media *Nutrient Broth* (NB) yang mengandung 6,09; 28,34; dan 51,5 mg/L Pb, kemudian diinkubasi selama 0 jam, fase eksponensial, dan fase stasioner pada suhu 55 ºC. Kemampuan reduksi dilihat dari penurunan konsentrasi timbale pada media. Konsentrasi timbale tersisa dalam media diukur menggunakan *Atomic Absorption Spectrofotomery* (AAS). Data hasil penelitian dianalisis statistic menggunakan analisis varian (ANOVA) dua arah kemudian dilanjutkan dengan uji LSD (*Least Significant Different*) untuk mengetahui perbedaan masing-masing perlakuan. Hasil penelitian menunjukkan bahwa jenis isolat, lama inkubasi, dan variasi konsentrasi berpengaruh terhadap reduksi atau penurunan konsentrasi timbal dalam media (Sig. ≤ 0,05). Isolat bakteri termofilik D2 dan D19 memiliki kemampuan mereduksi logam pada variasi perlakuan konsentrasi (51,5; 28,34 dan 6,09 mg/L). Reduksi maksimal terjadi pada isolat D19 pada konsentrasi 6,09 mg/L sebesar 95%.

Kata kunci: bakteritermofilik, reduksi, Timbal (Pb), *Atomic Absorption Spectrophotometry* (AAS)

***Abstract***

*This research was aimed to find out the isolates of thermophilic bacteria from Gendol River after the eruption of Merapi in 2010 to reduce heavy metal plumbum, and to find out an optimum bacteria growth phase in reducing heavy metal plumbum, and to find out the effect of metals consentration to reduce heavy metal plumbum, and to find out the effect of incubation time to reduce heavy metal plumbum. This research was an experimental study, using isolates termophilic bacteria D2 and D19 from Gendol River after the eruption of Merapi in 2010. Both of the bacteria were growth on Nutrient Broth (NB) medium that contain 6,09; 28, 34 and 51,5 mg/L Pb, then incubated for 0 hour, exponential phase and stationary phase at temperatures 55 ºC. The ability to reduce viewed of decresing the concentration of plumbum in the medium. The remaining plumbum concentration in the medium was measured by Atomic Absorption Spectrofotomery (AAS). The data was statistically analized using Analysis of Variance (ANOVA), continued by LSD (Least Significant Different) to determine differences for each treatment.The result of this research shows that variation of isolates and concentration and incubation time were influence the reduction the concentration of plumbum in medium (Sig. ≤ 0,05). The termophilic bacteria isolates D2 and D19 have an ability to reduce Pb metals in all variances treatment (51,5; 28,34 and 6,09 mg/L). The maximal absorption in plumblum 6,09 mg/L of isolate D19 at stationary phase incubation time was 95%.*

*Keywords : thermophilic bacteria, reduction, plumbum (Pb), Atomic Absorption Spectrophotometry (AAS)*