

## KEMAMPUAN *Bacillus cereus* TD5B DALAM MENDEGRADASI BAHAN ORGANIK DAN MEREDUKSI KROM LIMBAH PENYAMAKAN KULIT

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### INTISARI

Penelitian ini bertujuan untuk mengetahui kemampuan *Bacillus cereus* TD5B dalam mendegradasi bahan organik dan mereduksi krom limbah penyamakan kulit. Penelitian dilakukan dengan melihat pertumbuhan bakteri *Bacillus cereus* TD5B pada medium cair yang telah diberi limbah penyamakan kulit dengan konsentrasi limbah 0% dan 25% dengan konsentrasi nutrisi 100%, 75%, dan 50%. Proses bioremediasi menggunakan konsentrasi limbah 25% dengan perlakuan tanpa pemberian molases dan pemberian molases sebanyak 1% selama 14 hari dan ditambahkan kultur bakteri 2%. Data yang didapatkan dari penelitian ini yaitu perubahan konsentrasi *Chemical Oxygen Demand*, *Biological Oxygen Demand*, *Total Suspended Solid*, *Total Dissolved Solid*, Total Krom, Total Amonia Nitrogen, dan Total Nitrogen selama 14 hari kemudian dianalisis secara deskriptif serta dilakukan pengulangan 2 kali. Hasil penelitian menunjukkan bahwa bakteri *Bacillus cereus* TD5B dapat tumbuh pada medium yang ditambahkan limbah penyamakan kulit dengan konsentrasi 25%. Hasil bioremediasi selama 14 hari tanpa penambahan molases mengalami penurunan pada parameter COD sebesar 541,05 ppm, BOD sebesar 358,9 ppm, TSS sebesar 35 ppm, Krom Total sebesar 0,68 ppm, Total Amonia Nitrogen sebesar 16,98 ppm, dan Total Nitrogen sebesar 17 ppm dan peningkatan pada parameter TDS sebesar 1505 ppm. Hasil bioremediasi selama 14 hari dengan penambahan molases mengalami penurunan pada parameter COD sebesar 3450 ppm, BOD sebesar 2310 ppm, Krom Total sebesar 0,48 ppm, Total Amonia Nitrogen sebesar 6,4 ppm, dan Total Nitrogen sebesar 15 ppm dan peningkatan pada parameter TSS sebesar 153 ppm dan TDS sebesar 1140 ppm. Kesimpulan dari penelitian ini yaitu bakteri *Bacillus cereus* TD5B dapat mereduksi bahan organik dan krom.

Kata kunci: Bioremediasi, Reduksi Krom, Limbah Penyamakan kulit, *Bacillus cereus*, Molases

## ABSTRACT

### ABILITY OF *Bacillus cereus* TD5B IN DEGRADING ORGANIC MATTER AND REDUCING CHROMIUM IN LEATHER TANNING WASTE

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This study aims to determine the ability of *Bacillus cereus* TD5B in degrading organic matter and reducing chromium in leather tanning waste. The study was conducted using leather tannery waste which was treated with added isolates of *Bacillus cereus* TD5B bacteria. The study was done by observing the growth of *Bacillus cereus* TD5B bacteria in a medium that had been given tannery waste with a concentration of 0% and 25% and nutrient with a concentration of 100%, 75%, and 50%. The bioremediation process uses a 25% concentration of waste with treatment without molasses and 1% molasses for 14 days and 2% bacterial culture. The data from this study are the concentration of Chemical Oxygen Demand, Biological Oxygen Demand, Total Suspended Solid, Total Dissolved Solid, Total Chromium, Total Ammonia Nitrogen, and Total Nitrogen for 14 days and then analyzed descriptively and repeated twice. The results showed that *Bacillus cereus* TD5B bacteria could grow in the medium with a 25% concentration of tannery waste. The results of bioremediation for 14 days without the addition of molasses decreased in COD parameters of 541.05 ppm, BOD of 358.9 ppm, TSS of 35 ppm, Total chromium of 0.68 ppm, Total Ammonia Nitrogen of 16.98 ppm, and Total Nitrogen is 17 ppm and an increase in the TDS parameter is 1505 ppm. The results of bioremediation for 14 days with the addition of molasses decreased in COD parameters by 3450 ppm, BOD by 2310 ppm, Total Chromium by 0.48 ppm, Total Ammonia Nitrogen by 6.4 ppm, and Total Nitrogen by 15 ppm, and an increase in TSS parameters of 153 ppm and TDS of 1140 ppm. This research concludes that *Bacillus cereus* TD5B bacteria can reduce organic matter and chromium.

Keywords : Bioremediation, Chromium Reduce, Tannery Waste, *Bacillus cereus*, Molasses