

## PENURUNAN KADAR BAHAN ORGANIK DAN KADAR KROM LIMBAH PENYAMAKAN KULITOLEH *Bacillus cereus* LS2B

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### INTISARI

Penelitian ini bertujuan untuk mengetahui kemampuan bakteri dalam menurunkan kadar amonia, krom dan bahan organik limbah sebagai agen bioremediasi dan biotransformasi dan mengetahui pertumbuhan *Bacillus cereus* LS2B pada medium yang mengandung limbah samak kulit dengan konsentrasi *nutrient* yang berbeda (100%, 75%, dan 50%). Penelitian dilakukan dengan melihat pertumbuhan *Bacillus cereus* LS2B pada medium cair yang telah diberi limbah penyamakan kulit dengan konsentrasi limbah 0% dan 25%. 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 pertumbuhan bakteri, konsentrasi amonia, total krom, kandungan bahan organik dan total N dianalisis secara deskriptif serta dilakukan pengulangan 2 kali. Hasil penelitian menunjukkan bahwa *Bacillus cereus* LS2B dapat tumbuh pada medium yang ditambahkan limbah penyamakan kulit 25%. Hasil bioremediasi selama 14 hari mengalami penurunan yaitu tanpa pemberian molases untuk parameter *Chemical Oxygen Demand* sebesar 488,2 ppm; *Biochemical Oxygen Demand* 250,2 ppm; *Total Suspended Solid* 33 ppm; total krom 0,6668 ppm; N total 83,3 ppm dan amonia total 18,4729 ppm, sedangkan dengan pemberian molases *Chemical Oxygen Demand* sebesar 7.462 ppm; *Biochemical Oxygen Demand* 1.740 ppm; total krom 0,4083 ppm; dan N total 166,6 ppm. Parameter yang mengalami peningkatan yaitu tanpa pemberian molases yaitu *Total Dissolved Solid* sebesar 1.295 ppm sedangkan pada pemberian molases *Total Suspended Solid* 71 ppm; *Total Dissolved Solid* 1.625 ppm dan amonia total 8,7 ppm. penurunan parameter krom heksavalen dan sulfida terlalu sedikit. Kesimpulan dari penelitian ini yaitu *Bacillus cereus* LS2B dapat mereduksi bahan organik serta krom dan penambahan molases berpengaruh kepada peningkatan bahan organik limbah.

Kata kunci : limbah penyamakan kulit, bioremediasi, *Bacillus cereus*.

## DEGRADATION OF ORGANIC MATTER AND CHROME LEVELS IN TANNERY WASTE BY *Bacillus cereus* LS2B

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### ABSTRACT

This research aims to determine the growth of *Bacillus cereus* LS2B on the medium contained tannery waste and its ability to reduce the levels of ammonia, chromium and organic matter as bioremediation and biotransformation agent. The research was conducted by conserving the growth of the bacteria liquid nutrient medium that added with tannery waste with concentration of 0% and 25%. The bioremediation process was used a 25% concentration of waste with treatment without and with 1% molasses and added with 2% of bacteria culture for 14 days. The data that was obtained are bacterial growth, ammonia concentration, total chromium, organic matter and total N was analyzed using analytical descriptive. The results showed that *Bacillus cereus* LS2B could grow on a medium with 25% tannery waste added. The results of bioremediation for 14 days decreased. Sample result without addition of molasses for *Chemical Oxygen Demand* parameter was 488,2 ppm; *Biochemical Oxygen Demand* 250,2 ppm; *Total Suspended Solid* 33 ppm; chromium concentration 0,6668 ppm; total N 0,08% and ammonia concentration 18,4729 ppm while sample result with addition of molasses for *Chemical Oxygen Demand* 7.462 ppm; *Biochemical Oxygen Demand* 1.740 ppm; chromium concentration 0,4083 ppm; and total N 166,6 ppm. Parameter that increased without addition of molasses was *Total Dissolved Solid* 1.295 ppm, while with addition of molasses were *Total Suspended Solid* 71 ppm; *Total Dissolved Solid* 1.625 ppm and ammonium concentration 8,7 ppm. The decreasing amount of chromium hexavalent and sulphide was low. The conclusion of this research is *Bacillus cereus* LS2B can reduce organic matter and chromium in tannery waste and the addition of molasses increase organic matter in tannery waste.

Key word : tannery waste, bioremediation, *Bacillus cereus*.