

RINGKASAN

Limbah batik mengandung logam berbahaya diantaranya adalah Cr, Cu, Zn, dan Mn. Limbah batik yang dihasilkan dari industri tekstil umumnya merupakan senyawa anorganik *non-biodegradable*, yang dapat menyebabkan pencemaran terutama lingkungan perairan. Logam yang masuk dalam bentuk ion akan diikat oleh protein darah (Metalotionin), disebut ikatan M+Mt. Ikatan tersebut bersifat stabil dan tidak mudah lepas, sehingga memicu pembentukan radikal bebas. Radikal bebas akan menimbulkan reaksi peroksidasi lipid yang dapat merusak hati, sehingga terjadi peningkatan kadar enzim SGPT yang merupakan parameter gangguan pada fungsi hati. Ikan Nila (*Oreochromis niloticus*) dianggap sebagai bioindikator untuk studi toksikologi perairan dan monitoring lingkungan, mudah beradaptasi di segala kondisi lingkungan, dan memiliki nilai komersial yang tinggi. Penelitian dilakukan di Stasiun Percobaan Program Studi D3 Pengelolaan Sumberdaya Perikanan, Laboratorium Ekotoksikologi, dan Laboratorium Fisiologi Tumbuhan Fakultas Biologi Universitas Jenderal Soedirman, Purwokerto. Penelitian ini dilakukan secara eksperimental dengan Rancangan Acak Lengkap (RAL). Analisis data menggunakan uji Anova dengan taraf kepercayaan 95% dan tingkat kesalahan 5%, dilanjutkan dengan uji Duncan.

Hasil penelitian ini menunjukkan bahwa efek subletal limbah batik terhadap aktivitas enzim SGPT pada serum ikan Nila (*Oreochromis niloticus*) nilainya berbanding lurus. Hasil perhitungan rerata aktivitas enzim SGPT selama 48 jam pada perlakuan kontrol $6,17 \pm 0,98$ U/L, konsentrasi 17% v/v yaitu $11,67 \pm 1,51$ U/L, konsentrasi 34% v/v yaitu $17,67 \pm 1,51$ U/L, dan konsentrasi 51% v/v yaitu $121,83 \pm 1,9$ U/L. Analisis Anova ($\alpha=0,05$) didapatkan nilai F hitung (199,552) > F tabel (4,30). Hasil uji Duncan menunjukkan bahwa perlakuan limbah batik dengan konsentrasi 51% v/v selama 48 jam, paling berdampak terhadap penurunan fungsi enzim SGPT.

Kata kunci : *Enzim SGPT, Ikan Nila, Limbah Batik, Subletal.*

SUMMARY

Batik waste contains dangerous metals including Cr, Cu, Zn, and Mn. Batik waste produced from the textile industry is generally non-biodegradable inorganic compound, which can cause pollution especially the aquatic environment. Metals that enter in the form of these ions will be bound by blood proteins (Metalotionin), called the M+Mt bond. The bond is stable and not easily separated, thus triggering the formation of free radicals. Free radicals will cause lipid peroxidation reactions that can damage the liver, resulting in an increase in the levels of the SGPT enzyme which is a parameter of impaired liver function. Tilapia (*Oreochromis niloticus*) is considered a bioindicator for aquatic toxicology studies and environmental monitoring, is adaptable in all environmental conditions, and has high commercial value. The research was conducted at the Experiment Station D3 Fisheries Resource Management Program, Ecotoxicology Laboratory, and Plant Physiology Laboratory, Faculty of Biology, Jenderal Soedirman University, Purwokerto. This research was conducted experimentally with a Completely Randomized Design (CRD). Data analysis used the Anova test with a confidence level of 95% and an error rate of 5%, followed by the Duncan test.

The results of this study indicate that the sublethal effect of batik waste on SGPT enzyme activity in serum Tilapia (*Oreochromis niloticus*) is directly proportional. The results of the calculation of the average SGPT enzyme activity for 48 hours in the control treatment 6.17 ± 0.98 U/L, concentration of 17% v/v which is 11.67 ± 1.51 U/L, concentration of 34% v/v which is 17.67 ± 1.51 U / L, and concentration of 51% v/v which is 121.83 ± 1.9 U/L. Anova analysis ($\alpha = 0.05$) obtained the calculated F value ($199.552 > F$ table (4.30)). Duncan's test results showed that the treatment of batik waste with a concentration of 51% v/v for 48 hours, most had an impact on the decline in SGPT enzyme function.

Keywords: *Batik Waste, SGPT Enzyme, Sublethal, Tilapia.*