

ABSTRAK

Syifa Masyitoh (Dibimbing oleh: Ayi Yustiati dan Roffi Grandiosa H.). 2023. Efek toksik insektisida nabati berbahan aktif *eugenol* dan *azadirachtin* pada kekebalan tubuh dan pertumbuhan ikan mas (*Cyprinus carpio*).

Penelitian ini bertujuan untuk melihat pengaruh pemaparan insektisida nabati berbahan aktif *eugenol* dan *azadirachtin* terhadap kelangsungan hidup dan pertumbuhan pada benih ikan mas (*Cyprinus carpio*). Penelitian dilaksanakan pada bulan September hingga Oktober 2022 di *Hatchery* Kawasan Perikanan Darat Ciparanje Fakultas Perikanan dan Ilmu Kelautan, Universitas Padjadjaran. Metode penelitian yang digunakan adalah metode eksperimental dan rancangan percobaan yang digunakan dalam penelitian ini adalah rancangan acak lengkap (RAL). Penelitian ini menggunakan enam perlakuan dengan tiga kali ulangan. Perlakuan yang diuji pada penelitian ini yaitu Perlakuan A (tanpa penambahan insektisida nabati sebagai kontrol), B (12,8 ppm), C (25,6 ppm), D (38,4 ppm), E (51,2 ppm), dan F (64 ppm). Parameter yang diamati kelangsungan hidup, sistem imun, pertumbuhan, respon pakan, respon kejut dan kualitas air. Pengamatan berlangsung selama 28 hari setelah diberi insektisida nabati. Hasil penelitian menunjukkan bahwa parameter pertumbuhan, kelangsungan hidup dan sistem kekebalan tubuh pada benih ikan mas (*Cyprinus carpio*) mengalami penurunan akibat pengaruh paparan insektisida nabati berbahan aktif *eugenol* dan *azadirachtin*. Persentase kelangsungan hidup tertinggi terdapat pada perlakuan A (kontrol) sebesar 100%, sedangkan persentase kelangsungan hidup terendah terdapat pada perlakuan F (64 ppm) sebesar 81,7%. Pertumbuhan panjang mutlak tertinggi terdapat pada perlakuan A (kontrol) sebanyak 2,73 cm, nilai pertumbuhan panjang mutlak terendah terdapat pada perlakuan F (64 ppm) sebanyak 1,97 cm. Pertumbuhan bobot tertinggi terdapat pada perlakuan A (kontrol) sebesar 4,2 g, dan nilai pertumbuhan panjang mutlak terendah terdapat pada perlakuan F (64 ppm) sebesar 2,6 g. Jumlah rata-rata sel darah putih tertinggi berada pada perlakuan F (64 ppm) di hari ke-3 sebanyak $10,26 \times 10^4$ sel/mm³, dan jumlah rata-rata sel darah putih terendah berada pada perlakuan A (kontrol) di hari ke-3 sebanyak $6,56 \times 10^4$ sel/mm³. Rata-rata jumlah terbanyak sel merah terdapat pada perlakuan A (kontrol) di hari ke-3 sebanyak $1,65 \times 10^6$ sel/mm³, dan rata-rata jumlah sel darah merah paling sedikit terdapat pada perlakuan F (64 ppm) sebanyak $0,63 \times 10^6$ sel/mm³.

Kata kunci: *Azadirachtin, eugenol, ikan mas, insektisida nabati, kelangsungan hidup, pertumbuhan, sistem imun.*

ABSTRACT

Syifa Masyitoh (Supervised by: Ayi Yustiati and Roffi Grandiosa H.). 2023. The toxic effects of bio insecticides containing the active ingredients eugenol and azadirachtin on immune response and growth of common carp (*Cyprinus carpio*).

This study aims to examine the effects of exposure to bio insecticides containing the active ingredients eugenol and azadirachtin on the survival and growth of common carp (*Cyprinus carpio*). The research was conducted from September to October 2022 at the Freshwater Fisheries Hatchery of Ciparanje, Faculty of Fisheries and Marine Sciences, Universitas Padjadjaran. The research method used was experimental, and the experimental design employed was a completely randomized design (CRD). The study included six treatments with three replications. The treatments tested in this research were Treatment A (without the addition of botanical insecticides as the control), B (12.8 ppm), C (25.6 ppm), D (38.4 ppm), E (51.2 ppm), and F (64 ppm). The parameters observed were survival rate, immune system, growth, feeding response, startled response, and water quality. The observations were carried out for 28 days after the application of botanical insecticides. The research results indicated that growth, survival rate, and immune system parameters of common carp (*Cyprinus carpio*) decreased due to the influence of exposure to bio insecticides containing eugenol and azadirachtin. The highest survival rate percentage was found in Treatment A (control) at 100%, while the lowest survival rate percentage was found in Treatment F (64 ppm) at 81.7%. The highest absolute length growth was observed in Treatment A (control) at 2.73 cm, and the lowest absolute length growth value was found in Treatment F (64 ppm) at 1.97 cm. The highest weight gain was recorded in Treatment A (control) at 4.2 g, and the lowest weight gain value was found in Treatment F (64 ppm) at 2.6 g. The highest average white blood cell count was observed in Treatment F (64 ppm) on the 3rd day at 10.26×10^4 cells/mm³, while the lowest average white blood cell count was recorded in Treatment A (control) on the 3rd day at 6.56×10^4 cells/mm³. The highest average red blood cell count was found in Treatment A (control) on the 3rd day at 1.65×10^6 cells/mm³, while the lowest average red blood cell count was observed in Treatment F (64 ppm) at 0.63×10^6 cells/mm³.

Keywords: *Azadirachtin, bio insecticides, common carp, eugenol, growth, immune system, survival rate.*