

## **PENGARUH PERGANTIAN AIR DALAM USAHA PENURUNAN RESIDU TETRASIKLIN PADA IKAN NILA PASCATERAPI**

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### **INTISARI**

Produk pangan asal hewan yang bebas dari cemaran biologi dan kimia merupakan syarat mutlak keamanan pangan asal hewan. Keberadaan residu antibiotik dalam pangan asal hewan merupakan salah satu masalah yang membahayakan kesehatan manusia. Penelitian bertujuan untuk mengetahui pengaruh frekuensi pergantian air 50% dan lama waktu perlakuan terhadap kadar residu tetrasiklin pada daging ikan nila pascaterapi dan membuat model persamaan sebagai rekomendasi manajemen pergantian air yang sebaiknya dilakukan sebagai upaya penurunan residu tetrasiklin dalam daging ikan nila. Kadar residu tetrasiklin dalam daging ikan nila dianalisis dengan alat kromatografi cair kinerja tinggi (KCKT). Seratus dua puluh lima (125) ikan nila merah jenis Nilasa umur enam bulan dengan berat badan antara 350 – 450 gram digunakan dalam penelitian. Ikan Nilasa sebanyak lima (5) ekor dieutanasia sebelum dilakukan penelitian. Sebanyak sembilan puluh enam (96) ikan Nilasa diinjeksi antibiotik tetrasiklin dosis 50 mg/kg berat badan per hari secara intramuskuler selama lima hari berturut-turut. Dua puluh empat (24) ikan nila sebagai kontrol negatif (K1) diinjeksi dengan NaCl. Sembilan puluh enam (96) ikan nila yang telah diinjeksi tetrasiklin dibagi menjadi empat kelompok perlakuan, yaitu kelompok perlakuan pergantian air 2 kali sehari (K2), kelompok pergantian air 1 kali sehari (K3), kelompok pergantian air 2 hari sekali (K4), dan kelompok pergantian air 3 hari sekali (K5). Perlakuan pergantian air dilakukan selama 16 hari. Kadar residu selama 16 hari perlakuan pergantian air pada masing-masing kelompok dianalisis dengan analisis statistik *repeat measure* dalam program SPSS 16.0. Hubungan antara kadar residu dengan waktu perlakuan dalam kelompok dianalisis dengan uji korelasi Pearson. Model pola penurunan residu dianalisis dengan program Microsoft Excel 2013. Berdasarkan hasil analisis data penelitian, kadar residu tetrasiklin pada ikan kelompok pergantian air 2 kali sehari berada di bawah batas maksimum residu (BMR) selama 16 hari. Model persamaan dapat dibuat untuk memperkirakan frekuensi pergantian air dan lama waktu perlakuan pascainjeksi sebagai usaha penurunan residu antibiotik tetrasiklin. Berdasarkan model persamaan, kadar residu pada ikan kelompok pergantian air 2 kali dapat dihilangkan pada hari ke-16. Pergantian air 3 kali sehari mampu menghilangkan residu pada daging ikan nila dalam waktu enam hari. Kesimpulan dari penelitian bahwa pergantian air 50% dapat mengurangi kadar residu tetrasiklin dalam daging ikan nila. Kadar residu lebih cepat mengalami penurunan dengan frekuensi pergantian air yang lebih banyak.

**Kata kunci: nila, tetrasiklin, residu, pergantian air 50%, KCKT**

## **THE EFFECT OF WATER REPLACEMENT IN TETRASIKLIN RESIDUE DEPLETION OF POST-THERAPY TILAPIA**

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### **ABSTRACT**

Food products of animal origin that free from biological and chemical contamination are an absolute requirement of food safety. The presence of antibiotic residue in the food of animal origin is one of the problems that is threatening the human health. This research aims to analyse the effect of 50% water replacement frequency and the duration of treatment to the concentration of tetracycline residue in post-therapy tilapia and to recommend water change management as the solutions to reduce the tetracycline residue in tilapia meat. The concentration of tetracycline residue was quantitated by high-performance liquid chromatography (HPLC). This research used the total of 125 Nilasa strain red tilapias aged six-month and weighed from 350 to 450 grams. Five (5) Nilasa were euthanised before the research. Ninety six (96) tilapias were injected by tetracycline 50 mg/kg per day in 5 consecutive days by intramuscular injection. Meanwhile, 24 tilapias were included as K1 (control group) and were injected by NaCl. Subsequently, those 96 tilapias were divided into four groups of treatment, namely K2 (water changed 2 times per day), K3(water changed 1 time per day), K4 (water changed per 2 days) and K5 (water changed per 3 days). The water change treatment was carried out for 16 days. Residual level for 16 days of treatment of water change in each group was analyzed by statistical analysis of repeat measure in SPSS 16.0 program. The relationship between the residual level and the treatment time in the group was analyzed by Pearson correlation test. The residual depletion model was analyzed with Microsoft Excel 2013 program. Based on the study result, the level of tetracycline residue in K2 group was below the maximum residue limit (MRL) in day-16. The equation model can be used as a prediction for water change frequency and the duration of postinjection treatment to reduce the tetracycline residue level. Based on the equation model, residue of the K2 group can be eliminated on the 16th day. The replacement of water 3 times a day can eliminate the residue in tilapia meat in 6 days. In conclusion, 50% water change was able to reduce tetracycline residue level in tilapia meat. The level of residue is more rapidly decrease with the more frequency of water replacement.

**Keywords: tilapia, tetracycline, residue, water replacement, HPLC**