

## ABSTRAK

Laporan Thai-PAN dan Dewan Konsumen Thailand (TCC) tahun 2024 mengungkapkan bahwa sebagian besar anggur *Shine Muscat* yang beredar di pasar Thailand mengandung residu pestisida melebihi ambang batas yang ditetapkan, termasuk klorpirifos yang telah dilarang penggunaannya. Kondisi ini menimbulkan kekhawatiran terhadap keamanan konsumsi buah impor, termasuk di Indonesia. Penelitian ini bertujuan untuk mengukur dan menganalisis kadar residu pestisida pada anggur *Shine Muscat* yang dijual di Kota Karawang, baik sebelum maupun sesudah pencucian, serta mengevaluasi kesesuaiannya dengan Batas Maksimum Residu (BMR) yang berlaku di Indonesia. Analisis dilakukan menggunakan metode kuantitatif *High Performance Liquid Chromatography* (HPLC) dengan kolom ODS-C18 dan fase gerak air:metanol (70:30) pada pH 7. Validasi metode dilakukan melalui uji presisi, linearitas, LOD-LOQ, dan akurasi. Sampel diperoleh dari tiga titik penjualan, yaitu supermarket, minimarket, dan toko buah segar, dengan dua perlakuan: tanpa pencucian dan setelah pencucian. Hasil penelitian menunjukkan kadar residu pestisida sebelum pencucian berkisar antara 1,8–4,9 mg/L dan menurun menjadi 0,28–3,9 mg/L setelah pencucian. Validasi metode menunjukkan hasil yang baik dengan  $R^2 = 0,9946$ ; LOD = 0,086 mg/L; LOQ = 0,286 mg/L; persen recovery 97,75–100,5%; dan koefisien variasi 0,00389%. Kadar residu pestisida pada anggur 1 ( $1,8 \pm 4,77$  mg/L) dan anggur 2 ( $1,8 \pm 1,80$  mg/L) telah melampaui BMR, sedangkan pada anggur 3 tetap melebihi BMR baik sebelum pencucian ( $4,9 \pm 10,42$  mg/L) maupun setelah pencucian ( $3,9 \pm 20,79$  mg/L). Temuan ini menunjukkan bahwa anggur *Shine Muscat* yang diuji di Karawang belum memenuhi standar keamanan konsumsi meskipun telah melalui proses pencucian.

**Kata Kunci:** Cemaran, Residu Pestisida, Anggur *Shine Muscat*, HPLC

## ABSTRACT

A 2024 report by Thai-PAN and the Thailand Consumer Council (TCC) revealed that most Shine Muscat grapes sold in the Thai market contained pesticide residues exceeding the established limits, including chlorpyrifos, which has already been banned. This situation raises concerns regarding the safety of imported fruits, including those consumed in Indonesia. This study aimed to measure and analyze pesticide residue levels in Shine Muscat grapes marketed in Karawang City, both before and after washing, and to evaluate their compliance with the Indonesian Maximum Residue Limit (MRL). The analysis was conducted using High Performance Liquid Chromatography (HPLC) with an ODS-C18 column and a mobile phase of water:methanol (70:30) at pH 7. Method validation included precision, linearity, LOD-LOQ, and accuracy tests. Samples were collected from three sales points, supermarkets, minimarkets, and fresh fruit stores, with two treatments: unwashed and washed. Results showed that pesticide residues before washing ranged from 1.8–4.9 mg/L and decreased to 0.28–3.9 mg/L after washing. The method demonstrated good validation with  $R^2 = 0.9946$ ;  $LOD = 0.086$  mg/L;  $LOQ = 0.286$  mg/L; recovery of 97.75–100.5%; and a coefficient of variation of 0.00389%. Residue levels in grape 1 ( $1.8 \pm 4.77$  mg/L) and grape 2 ( $1.8 \pm 1.80$  mg/L) exceeded the MRL, while grape 3 remained above the MRL both before washing ( $4.9 \pm 10.42$  mg/L) and after washing ( $3.9 \pm 20.79$  mg/L). These findings indicate that Shine Muscat grapes tested in Karawang did not meet food safety standards, even after washing.

**Keywords:** Contamination, Pesticide Residues, Shine Muscat Grapes, HPLC