UNIVERSITAS
GADJAH MADA
Analisis Risiko Paparan Histamin pada Konsumen Tuna dengan Metode Semi-Kuantitatif di Kabupaten Sleman
Selestino Barthanso Barasa, Indun Dewi Puspita, S.P., M.Sc., Ph.D.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

INTISARI

Analisis Risiko Paparan Histamin pada Konsumen Tuna dengan Metode Semi-Kuantitatif di Kabupaten Sleman

Penelitian ini bertujuan menganalisis kondisi penanganan, tingkat kesegaran, kandungan histamin, paparan, dan tingkat risiko histamin akibat konsumsi ikan tuna yang dipasarkan di Kabupaten Sleman. Penelitian dilaksanakan pada November 2025 hingga Februari 2026 menggunakan 30 sampel ikan tuna yang diperoleh secara *purposive* dari tiga pasar tradisional dan tiga pasar modern. Pengujian kesegaran meliputi penilaian organoleptik, pH, *Total Volatile Base* (TVB), dan kadar histamin. Data dianalisis secara deskriptif, uji-t, dan regresi linear sederhana. Paparan histamin dihitung melalui *Estimated Daily Intake* (EDI), persentase *Acute Reference Dose* (%ARfD), serta penilaian risiko semi-kuantitatif menggunakan *Risk Ranger*. Hasil penelitian menunjukkan bahwa sebagian besar sampel masih segar dan layak dikonsumsi. Nilai pH berkisar 5,65–6,02, kadar TVB 0,18–1,90 mg N/100 g, dan kadar histamin 1,07–1,88 mg/100 g sehingga seluruhnya memenuhi batas keamanan SNI 2729:2021. Nilai EDI mencapai 0,00015 mg/kg bb pada pasar tradisional dan 0,00019 mg/kg bb pada pasar modern, dengan nilai %ARfD masing-masing sebesar 0,031% dan 0,032%. Analisis regresi menunjukkan bahwa pH berpengaruh signifikan terhadap kadar histamin, sedangkan organoleptik, suhu, dan TVB tidak berpengaruh signifikan. *Risk Ranger* menghasilkan skor risiko 55 dalam kategori tinggi, probabilitas penyakit 2 kasus per 10.000 kali konsumsi, dan prediksi 4.580 kasus per tahun. Upaya penanganan ikan tuna perlu ditingkatkan melalui pengendalian suhu, perbaikan proses distribusi, penyimpanan, dan penjualan untuk mencegah pembentukan histamin dan menekan risiko paparan pada konsumen.

Kata Kunci: histamin, ikan tuna, kesegaran ikan, penilaian risiko, *Risk Ranger*

UNIVERSITAS
GADJAH MADA
Analisis Risiko Paparan Histamin pada Konsumen Tuna dengan Metode Semi-Kuantitatif di Kabupaten Sleman
Selestino Barthanso Barasa, Indun Dewi Puspita, S.P., M.Sc., Ph.D.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

ABSTRACT

Risk Analysis of Histamine Exposure on Tuna Consumer using a Semi-Quantitative Method in Sleman Regency

This study aimed to analyze handling conditions, freshness levels, histamine content, exposure, and histamine risk associated with the consumption of tuna marketed in Sleman Regency. The study was conducted from November 2025 to February 2026 using 30 tuna samples purposively collected from three traditional markets and three modern markets. Freshness evaluation included organoleptic assessment, pH measurement, Total Volatile Base (TVB), and histamine determination. The data were analyzed using descriptive statistics, independent t-tests, and simple linear regression. Histamine exposure was estimated using the Estimated Daily Intake (EDI), percentage of Acute Reference Dose (%ARfD), and a semi-quantitative risk assessment with Risk Ranger. The results showed that most samples remained fresh and suitable for consumption. The pH values ranged from 5,65 to 6,02, TVB levels from 0,18 to 1,90 mg N/100 g, and histamine levels from 1.07 to 1.88 mg/100 g; therefore, all samples complied with safety limits specified in SNI 2729:2021. EDI values were 0,00015 mg/kg body weight in traditional markets and 0,00019 mg/kg body weight in modern markets, with corresponding %ARfD values of 0,031% and 0,032%. Regression analysis showed that pH significantly affected histamine levels, whereas organoleptic characteristics, temperature, and TVB had no significant effects. Risk Ranger generated a risk score of 55, categorized as high, a disease probability of 2 cases per 10.000 consumption events, and an estimated 4.580 cases annually. Tuna handling practices should therefore be improved through stricter temperature control and better distribution, storage, and sales procedures to prevent histamine formation and reduce consumer exposure risks.

Keywords: histamine, tuna, fish freshness, risk assessment, *Risk Ranger*