

**ANALISIS LOGAM Li, Ti, Ni, As, Cd, DAN Pb PADA IKAN TUNA  
(*Thunnus* sp) DARI TPI SADENG GUNUNGKIDUL, YOGYAKARTA  
MENGUNAKAN ICP-MS DAN TINGKAT KEAMANAN PANGANNYA**

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**INTISARI**

Penelitian analisis logam Li, Ti, Ni, As, Cd, dan Pb pada ikan tuna (*Thunnus* sp) dari TPI Sadeng Gunungkidul, Yogyakarta menggunakan ICP-MS dan tingkat keamanan pangannya telah dilakukan. Tujuan penelitian ini yaitu untuk menentukan konsentrasi logam Li, Ti, Ni, As, Cd, dan Pb pada ikan tuna (*Thunnus* sp) dari TPI Sadeng Gunungkidul dan tingkat keamanan pangannya, serta mengetahui korelasi konsentrasi logam terhadap morfometri ikan tuna.

Penelitian diawali dengan preparasi sampel yang meliputi pengukuran morfometri serta pemisahan 9 bagian daging ikan tuna. Kesembilan bagian tersebut meliputi daging *sekami*, *senaka* dan *seshimo* yang terletak di bagian punggung ikan (*dorsal*), daging *akami* terletak di bagian tengah, dan jenis daging *harakami*, *haranaka* serta *harashimo* yang terletak di bagian perut (*ventral*). Masing-masing sampel daging ikan tuna didestruksi menggunakan metode destruksi basah tertutup dengan penambahan HNO<sub>3</sub> pekat. Proses destruksi dilakukan pada temperatur 175 °C selama 38 menit di dalam *microwave digestion*. Setelah destruksi selesai, sampel diencerkan dengan *double distilled deionized water* (DDDW), kemudian konsentrasi logam dianalisis dengan menggunakan ICP-MS.

Hasil penelitian ini menunjukkan bahwa konsentrasi logam di dalam ikan tuna (*Thunnus* sp) dari TPI Sadeng Gunungkidul diurutkan dari yang tertinggi yaitu logam As > Ti > Ni > Pb > Li > Cd. Logam As telah melebihi ambang batas yang ditetapkan oleh BPOM RI. Logam tersebut terdistribusi pada daging ikan tuna dengan kadar tertinggi ditemukan pada jenis daging *akami* dan terendah pada daging *sekami*. Konsentrasi logam As berkorelasi negatif secara signifikan dengan berat total ( $r = -0,85$ ,  $p = < 0,05$ ) dan panjang ikan tuna ( $r = -0,90$ ,  $p = < 0,05$ ), sedangkan untuk logam lain menunjukkan korelasi positif dan negatif meskipun tidak signifikan. Batas aman konsumsi ikan tuna adalah 12,4 kg/minggu atau sekitar 8 ekor ikan/minggu dengan asumsi berat badan 60 kg.

Kata kunci: Analisis korelasi, destruksi basah, ICP-MS, ikan tuna, logam.

**THE METAL ANALYSIS OF Li, Ti, Ni, As, Cd, AND Pb IN TUNA FISH  
(*Thunnus* sp) FROM FISH AUCTION PLACE AT SADENG  
GUNUNGKIDUL, YOGYAKARTA USING ICP-MS AND ITS FOOD  
SAFETY LEVEL**

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**ABSTRACT**

The research on analysis of Li, Ti, Ni, As, Cd, and Pb in tuna fish (*Thunnus* sp) from fish auction place at Sadeng Gunungkidul, Yogyakarta using ICP-MS and its food safety level has been conducted. The purpose of this study was to determine the concentration of Li, Ti, Ni, As, Cd, and Pb in tuna fish (*Thunnus* sp) from TPI Sadeng Gunungkidul and its food safety level, also aims to determine the correlation between metal concentrations and tuna fish morphometrics.

This research was started by sample preparation including morphometrics measurement and separation of 9 parts of tuna meat. Sekami, senaka and seshimo were located on the back of the fish (dorsal), akami was located in the middle, while harakami, haranaka and harashimo were located in the stomach (ventral). Each samples of tuna meat were digested using a closed wet digestion method with the addition of concentrated HNO<sub>3</sub>. The destruction process was carried out at 175 °C for 38 minutes in a microwave digestion. After the digestion was complete, the samples were diluted with double distilled deionized water (DDDW), then the metal concentrations were analyzed using ICP-MS.

The results of this research showed that the metal concentrations in tuna fish from the highest were As > Ti > Ni > Pb > Li > Cd. Arsenic metal has exceeded the threshold limit determined by BPOM RI. The As metal was distributed in tuna meat with the highest concentration found in akami and the lowest in sekami. The concentration of As metal was significantly negatively correlated with total weight ( $r = -0.85, p = < 0.05$ ) and fish length ( $r = -0.90, p = < 0.05$ ), while for other metals showed positive and negative correlation although not statistically significant. The safe consumption limit for tuna fish was 12.4 kg/week or about 8 fish/week assuming body weight of 60 kg.

**Keywords:** Correlation analysis, ICP-MS, metals, tuna fish, wet digestion.