

**UTILIZATION OF STARFRUIT (*Averrhoa bilimbi* Linn)
SOLUTION TO REDUCE” MERCURY (Hg) LEVELS IN
MACKEREL FISH
(*Euthynnus affinis*)**

Vira Febyana¹, Rusmiati², Ngadino³

The Indonesian Ministry of
Health Polytechnic Ministry of Health
Surabaya

Environmental Sanitation Study Program Applied Bachelor

Program Email: febyanavira@gmail.com

ABSTRACT

The accumulation of the heavy metal mercury in fish can pose health risks to humans when consumed regularly. An initial investigation conducted by researchers on mackerel samples from Kenjeran Beach, Surabaya, revealed an average mercury concentration of 0.126 ppm. One approach to reducing mercury levels involves the use of starfruit, known for its citric acid content. The study aimed to assess the impact of immersing mackerel in starfruit solutions of varying concentrations (25%, 50%, 75%, and 100%) on mercury levels.

This research employed a pure experimental design, utilizing a one-group pre-test and post-test approach. The sample consisted of 30 mackerel fillet samples. These fillets underwent laboratory testing using atomic absorption spectrophotometry to measure mercury content before and after being immersed in the starfruit solution. Data analysis was performed through paired t-tests and one-way Anova tests.

The results indicated that the average mercury level in mackerel fish fillets before treatment was 0.134 mg/kg. After treatment, the highest average recorded was 0.121 mg/kg, with the lowest being 0.002 mg/kg. The paired t-test showed $P < \alpha$ (0.05), signifying a significant reduction. The most substantial decrease in mercury content, amounting to 97.88%, was observed at the 100% concentration for a duration of 30 minutes.

In conclusion, this study established a notable reduction in mercury levels in mackerel fillets following immersion in starfruit solution. It is recommended to consider pre-processing mackerel fish fillets, including immersion in starfruit solution, as a potential method. Future research avenues may explore the reduction of various heavy metals in mackerel and other fish species using starfruit solution or other acid derivatives.

Keywords : Star fruit (*Averrhoa bilimbi* Linn) , Mercury (Hg), Mackerel Fish (*Euthynnus affinis*)

PEMANFAATAN LARUTAN “BELIMBING WULUH (*Averrhoa bilimbi* Linn) UNTUK MENURUNKAN KADAR MERKURI (Hg) PADA IKAN

TONGKOL (*Euthynnus affinis*)
Vira Febyana¹, Rusmiati², Ngadino³

Kementerian Kesehatan RI
Politeknik Kesehatan Kemenkes Surabaya
Program Studi Sanitasi Lingkungan Program Sarjana Terapan
Jurusan Kesehatan Lingkungan
Email: febyanavira@gmail.com

ABSTRAK

Logam berat merkuri yang terakumulasi pada ikan dapat menimbulkan efek berbahaya bagi manusia apabila dikonsumsi secara terus. Studi pendahuluan pada sampel ikan tongkol yang dijual di kawasan Pantai Kenjeran Surabaya membuktikan adanya merkuri dengan konsentrasi rata-rata 0,126 ppm. Salah satu upaya untuk mengurangi kadar merkuri yakni menggunakan belimbing wuluh karena mengandung asam sitrat. Penelitian ini dilakukan untuk menginvestigasi dampak perendaman ikan tongkol dalam larutan belimbing wuluh bervariasi konsentrasi yaitu 25%, 50%, 75%, dan 100%, terhadap tingkat kandungan merkuri dalam ikan tersebut.

Penelitian ini merupakan eksperimen murni menggunakan desain *one group pre-test and posttest*. Sampel yang digunakan adalah fillet ikan tongkol sebanyak 30 sampel. Sampel diuji di laboratorium menggunakan metode Spektrofotometri Serapan Atom untuk mengukur konsentrasi merkuri sebelum dan sesudah perendaman larutan belimbing wuluh. Analisis hasil data menggunakan uji *paired t-test* dan uji *one way anova*.

Hasil laboratorium menunjukkan sebelum perlakuan, rata-rata kandungan merkuri *fillet* ikan Tongkol adalah 0,134 mg/kg, sedangkan setelah perlakuan, rata-rata tertinggi adalah 0,121 mg/kg dan rerata terendah adalah 0,002 mg/kg. Uji *paired t-test* menunjukkan hasil yang signifikan dengan hasil $P < \alpha$ (0,05). Penurunan tertinggi dalam kadar merkuri, yaitu 97,88%, terjadi saat ikan direndam dalam larutan belimbing wuluh konsentrasi 100% selama 30 menit. Penelitian selanjutnya dapat menjelajahi penurunan jenis logam berat lainnya pada ikan tongkol / spesies ikan lain menggunakan larutan belimbing wuluh atau asam turunan lainnya.

Kata kunci : Belimbing Wuluh (*Averrhoa bilimbi* Linn), Merkuri (Hg), Ikan Tongkol (*Euthynnus affinis*)