

ANALYSIS OF PERFORMANCE DATA IN THE STUDY OF
THE EFFECTS OF THE DETERMINATION OF
TECHNICAL STANDARDS OF THE ENGINEERING

CONTRIBUTION

FAKULTAS SAINS DAN TEKNOLOGI
UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

2005

COMPARISON OF PERFORMANCE BETWEEN THE STANDARD AND
MODIFIED METHOD IN THE DETERMINATION OF MERCURY IN FISH
CHIPS OF TERENGGANU

By

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Research Report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Science (Analytical and Environmental Chemistry)

Department of Chemical Sciences
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University College of Science and Technology Malaysia
2005

1100038676



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PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

**Comparison of Performance between the Standard and Modified Method in the
Determination of Mercury in Fish Chips of Terengganu**

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ACKNOWLEDGEMENT

First and foremost, I would like to thank the almighty god for blessing me with a good state of mind. I would like to express my greatest gratitude and thanks to my supervisor and associate supervisor, Professor Dr. Noor Azhar bin Mohd. Shazili and Dr. Nanok Kancono for their tireless efforts in guiding and correcting me throughout the progression of this study. Without the guidance and patience from both of them, this project would not be successful and be finished on time.

I would also like to express my sincere thanks to Dr. Ismat Ali Takruni, my mentor, for giving me guidance and knowledge regarding on instrumentation and method development. His motivation pushed me this far to completion of my study.

Special thanks to my family and friends for the support and confidence that my project would be successful. Thank you very much.

I would also like to express my gratitude to the Department of Chemistry, En Azrul (Science Officer), Cik Nooriyati Awang (Science Officer), En Ruzeman, Miss Benny, Mr William, Miss Wan Farah, Miss Farah Akmal and to all the other lab assistants, librarians and friends for their help and guidance for this study.

Thank you again for the entire above name and to those who have helped me directly and indirectly in the completion of my study.

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LIST OF ABBREVIATIONS

ACS	American Chemistry Society
BOD	Biological Oxygen Demand
CNN	Central News Network
CRM	Certified Reference Materials
CV-AAS	cold vapor- Atomic Absorption Spectrometry
DOH	Departmental Of Health
DOLT -2	Dogfish liver
DNA	Deoxyribonucleic Acid
EEC	European Emission Council
EPA	Environmental Protection Agency
FAO	Food and Drugs Administration
FDA	Food and Drugs Administration
GI	Gastro Intestinal
HNO ₃	Nitric Acid
KMnO ₄	Potassium Permanganate
NaCl	Sodium Chloride
NAS	National Academy of Science
NHANES	National Health and Nutrition Examination Survey
NO	Nitrogen Oxide
RSD	Relative Standard Deviation
RNA	Ribonucleic Acid

SD	Standard Deviation
SnCl	Stannous Chloride
TOC	Total Organic Carbon
WHO	World Health Organization

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ABSTRACT

The study was conducted to evaluate the modified method and standard method for the determination of mercury in “keropok keping” and “keropok lekor”. The samples were analyzed by using Cold Vapor -Atomic Absorption Spectrometry (CV-AAS). Several parameters were evaluated for both methods such as linearity, precision, accuracy and detection limit. The certified reference material used was DOLT-2 (DogFish Liver).The parameter shows better precision and accuracy for the modified method than standard method in the determination of mercury content in keropok lekor. By minimizing the sample for digestion and without the usage of potassium persulfate for the modified method, the results show better recovery than the standard method. Gas flow has significant effect to the absorbance and optimized at 47 ml min^{-1} . Variation of gas flow influences the detection of mercury in CV-AAS. The highest mercury concentration in “keropok lekor” was $162 \pm 1 \text{ ng/g}$ and “keropok keping” was $113.2 \pm 0.24 \text{ ng/g}$.

PERBANDINGAN KAEDAH PIAWAIAN DAN KAEDAH UBAHSUAI PIAWAIAN DALAM PENENTUAN MERKURI DI DALAM KEROPOK IKAN DI TERENGGANU

ABSTRAK

Kajian telah dijalankan bagi penentuan merkuri di dalam keropok lekor dan keropok keping melalui dua kaedah iaitu kaedah ubahsuai piawaian dengan kaedah piawaian. Sampel telah dianalisa dengan menggunakan teknik wap sejukan-Spektrometri Penyerapan Atom (CV-AAS). Pelbagai parameter telah dikaji seperti ujian kelinearan, ketepatan, kejituan dan had penentuan. Bahan rujukan piawaian yang digunakan dalam kajian ialah DOLT-2 (DogFish Liver). Kajian parameter mendapati kaedah ubahsuaian piawaian menunjukkan kejituan dan ketepatan yang lebih tinggi bagi bacaan kepekatan merkuri dalam sampel berbanding kaedah piawaian asal. Dengan meminimalkan sampel dan tanpa penggunaan kalium persulfat dalam kaedah piawaian didapati sampel menunjukkan secara signifikan nilai tidak berbeza dari nilai rujukan piawaian. Pengaliran gas mempunyai kesan terhadap tahap penentuan merkuri. Aliran gas dioptimalkan pada 47 ml min^{-1} . Tahap merkuri tertinggi dalam sampel keropok lekor ialah $162 \pm 1 \text{ ng/g}$ dan bagi keropok keping ialah $113.2 \pm 0.24 \text{ ng/g}$.