

Declaration

I, **DAVIES MWAZI SINYANGWE**, hereby declare to the best of my knowledge and belief, except for the literature cited, that this is my original work and has never been submitted at this University or any University or Institute of higher learning for a higher degree award.

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Signature

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Date

Approval

(a) I as a supervisor certify that this dissertation has successfully been examined and approved

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Certificate of completion

This dissertation of **Sinyangwe Mwazi Davies** has been successfully examined and approved as fulfilling partial requirements for the award of the degree of Master of Science in Biochemistry by the University of Zambia.

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Acknowledgements

I wish to express my sincere gratitude to my lecturers and supervisors; Dr. Gibson Sijumbila and Dr. Boniface Mbewe who guided me during the study right from the proposal preparation to the dissertation write up.

I would also like to acknowledge the technical staff of Zambia Bureau of Standards Laboratory who provided their assistance during the analysis of the samples.

I wish to appreciate the contribution of my research assistant Ms. Brendah Kasoka for her tireless effort during data and sample collection from the study site.

I also acknowledge the contribution of all the technical staff of University of Zambia and colleagues at the School of Medicine for their comments on various aspects of the study.

Special gratitude to my family for their contribution and support during my study. Their patience and support during the long hours away from home made a valuable contribution to my study.

Dedication

This study is dedicated to my sons and daughters Wila, Alinaswe, Twataizya and Faith

Abstract

Small scale and large scale farmers around Lusaka, the capital city of Zambia grow vegetables using intensive agriculture methods to satisfy the ever increasing demand. To ensure maximum yield farmers apply various types of pesticides to control pests and diseases that attack these vegetables. Organophosphate pesticides are widely used in agriculture for the control of various insect pests mainly in developing countries. The purpose of this study was to determine the residual levels of the most commonly used organophosphate, 2, 2-Dichlorovinyl dimethyl phosphate (Dichlorvos), in three common vegetables supplied at various study sites around Lusaka.

Samples of rape, lettuce and cabbage were randomly picked from the study sites around Lusaka. The vegetables were chopped into small pieces which were chemically treated to get methanol extracts. The extracts were then dissolved in an appropriate solvent and using Shimadzu High Performance Liquid Chromatography-Ultra-violet detector, levels of dichlorvos were determined.

The results of analysis showed that the levels of dichlorvos were significantly above the maximum accepted limit as set by Zambian Food and Drugs Act on vegetables. This higher than acceptable levels of dichlorvos may have implications on human health as the cumulative effect of organophosphates in human body has potential to cause long term health problems (Mackenzie Ross et al., 2010)

List of acronyms

FAO	Food and Agricultural Organization
FDA	Food and Drugs Act
HPLC	High Performance Liquid Chromatography
GDP	Gross Domestic Product
MRL	Maximum Residue Level
ZEMA	Zambia Environment Management Agency
OPs	Organophosphates Pesticides
WHO	World Health Organization

List of figures

Figure1. Showing cabbages at one of the study sites.....	8
Figure 2. The HPLC and lab Solution monitor used in the analysis of the sample and generation of chromatograms.....	12
Figure 3. Proportion of lettuce vegetable samples with Dichlorvos levels above or below MRL.....	17
Figure. 4. Proportion of cabbage vegetable samples with Dichlorvos levels above or below MRL.....	20
Figure. 5. Proportion of rape vegetable samples with Dichlorvos levels above or below MRL.....	23
Figure. 6. Average Dichlorvos levels in lettuce, cabbage and rape.....	25
Figure 7. Overall % distribution of Dichlorvos in the three vegetable	26

List of tables

Table 2.2.1. Dichlorvos nomenclature.....	6
Table 2.2.2. Physiochemical properties of Dichlorvos.....	7
Table 4.1.1 Scheme used for creation of a five standard calibration solutions	15
Table 4.1.2: Data for the linear regression obtained from the LabSolutions software.....	15
Table 4.2.1 Shows the Dichlorvos 'residue concentration (mg/kg) in lettuce (L).....	18
Table 4.2.2 Shows the Dichlorvos' residue concentration (mg/kg) for Cabbage (C).....	21
Table 4.2.3 Shows the Dichlorvos' residue concentration (mg/kg) for Rape (R).....	23
Table 4.2.4 Shows the mean Dichlorvos' residue concentration (mg/kg) for three vegetables.....	25

List of Appendices

Appendix 1. Vegetable data collection tool	35
Appendix 2. Chromatogram for lettuce generated by the labSolution software.....	36
Appendix 3. Chromatogram for cabbage generated by the labSolution software.....	37
Appendix 4. Chromatogram for rape generated by the labSolution software.....	38
Appendix 5. Statistical analysis for lettuce.....	39
Appendix 6. Statistical analysis for cabbage.....	41
Appendix 7. Statistical analysis for rape.....	43
Appendix 8. Biomedical Research Ethics committee approval.....	45

TABLE OF CONTENT

Declaration	i
Approval.....	ii
Certificate of completion.....	iii
Acknowledgements	iv
Dedication.....	v
Abstract	vi
List of acronyms.....	vii
List of figures.....	viii
List of tables.....	ix
List of Appendices.....	x

CHAPTER ONE

1.0. INTRODUCTION	1
1.1. Statement of the problem	2
1.2. Rationale of the study	3
1.3. Research question	3
1.4. Objectives	3
1.4.1 General objective	3
1.4.2 Specific objectives:	3

CHAPTER TWO

2.0. LITERATURE REVIEW	4
2.1. The historical aspect and use of pesticides	4
2.2. Physical and chemical properties of Dichlorvos.....	6
2.3. Mode of action of Dichlorvos	7
2.4. General characteristics of cabbage, rape and lettuce	8

CHAPTER THREE

3.0. METHODOLOGY	9
3.1. Study area and sampling sites	9
3.2. Sample collection	9
3.3. Materials and reagents	9
3.4. Principles of Chromatography.....	10

3.5.	Instrumentation- HPLC-VIS spectroscopy overview.....	11
3.6.	Procedure	12
	3.6.1. Sample preparation, extraction and cleanup.....	12
	3.6.2. HPLC instrumentation-extract analysis.....	13
3.7.	Quantification and identification of dichlorvos residues	13
	3.7. 1. Preparation of calibration curve	13
	3.7. 2. Quantification and identification of dichlorvos residues.....	13
3.8.	Ethical Consideration	14

CHAPTER FOUR

4.0.	RESULTS.....	15
4.1.	Calibration of standard dichlorvos solution	15
4.2.	Levels of Dichlorvos Residues found in Lettuce from the study site.....	16
4.3.	Levels of Dichlorvos Residues found in cabbage from the study site.....	19
4.4.	Levels of Dichlorvos Residues found in rape from the study site	22
4.5.	The mean levels of Dichlorvos Residues found in the vegetables from the study site ..	24

CHAPTER FIVE

5.0.	DISCUSSION	27
------	------------------	----

CHAPTER SIX

6.0.	CONCLUSION AND RECOMMENDATION.....	30
6.1.	Conclusion.....	30
6.2.	Recommendations.....	30

CHAPTER SEVEN

7.0.	REFERENCES	31
------	------------------	----

	Appendices.....	35
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	Appendix 1. Vegetable data collection tool	35
--	--	----

Appendix 2. Chromatogram for lettuce generated by the lab Solution software.....	36
Appendix 3. Chromatogram for cabbage generated by the lab Solution software.....	37
Appendix 4. Chromatogram for rape generated by the lab Solution software.....	38
Appendix 5. Statistical analysis for lettuce.....	39
Appendix 6. Statistical analysis for cabbage.....	41
Appendix 7. Statistical analysis for rape.....	43
Appendix 8. Ethics approval letter.....	45