



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

**INCIDENCE OF TYLOSIN RESIDUE IN BEEF CONSUMED IN
DOKOLO DISTRICT.**

BY:

AYO SUSAN

BU/UP/2018/2025.

**A RESEARCH DISSERTATION SUBMITTED TO THE FACULTY OF
AGRICULTURE AND ANIMAL SCIENCES FOR THE AWARD OF A
BACHELORS DEGREE OF ANIMAL PRODUCTION AND
MANAGEMENT OF BUSITEMA UNIVERSITY.**

SEPTEMBER, 2021.

ABSTRACT.

The main objective of the study was to assess the concentration of tylosin residue in beef consumed in Dokolo district located in the Northern part of Uganda. The study employed a quantitative approach where laboratory method was used and the concentration of tylosin was determined using HPLC machine. A total of 30 fresh beef (muscle) samples were purposively collected from the abattoir, slaughter slabs, and butcheries found in the district. The samples were taken to Wandegaya Analytical Laboratory for analysis. The concentrations were determined and then compared with the MRL as per the FAO/WHO Limits (0.1 parts per million). Results showed that tylosin was detected in all the samples submitted and the mean concentration was found to be 0.413 ± 0.37 ppm which was above WHO/FAO Limits. The one sample t-test conducted also showed that there is a significant difference between the actual mean and the hypothesized mean. This is because p-value (0.0001) is less than the level of significance (0.05). The high levels of the drug residues could have been due to its heavy use

Or failure to follow manufacturer's instructions. In conclusion, the study has shown that the poisonous drug residues (Tylosin) was present in beef consumed in Dokolo district. This finding demonstrates that there is a possibility of public health risk on the general public who consume beef from this research area. Therefore, there is need to reduce the concentration to levels that are not of public health concern. This can be through practical strategies such as; continuous sensitization of the public about drug use specifically tylosin. Comprehensive assessment of drug residues in all livestock products should also be done, this is to generate data for guiding policy makers. Other scientists can also research on the concentration of this drug in other organs apart from muscle and also in other animal species.

DECLARATION.

I Ayo Susan declare that this report contains my own work and has never been submitted to any institution for any assistance or award of academic credit or qualification.

NAME: AYO SUSAN.

REG NO: BU/UP/2018/2025.

Signature

.....

Date

.....

APPROVAL.

This report has been submitted with the approval of my Academic supervisor.

SUPERVISOR:

DR.GERALD ZIRINTUNDA

Lecturer

Department of Animal production and Management

Faculty of Agriculture and Animal Sciences

Busitema University,

P.O Box, 236 Tororo, Uganda.

Signature

Date

.....

.....

DEDICATION.

I would like to dedicate this work to my beloved husband, Mr. Wacha Caleb Omara, our father pastor Jimmy Omara and all my relatives who worked together with me up to this far. May the Lord bless you all for the kindness you showed me.

ACKNOWLEDGEMENT

In a special way, I would like to acknowledge the tireless support and contribution provided to me by my supervisor, **Dr. Gerald Zirintunda, Dr. Henry Matovu**, the research coordinator and **all my lecturers** in Animal Department during this special research project, may the Almighty God bless all of you abundantly.

I would also like to extend my gratitude to the District Production Officer of Dokolo district, **Dr. Richard Enyang** for granting me permission to collect samples from his area.

To my fellow students, am also grateful for the experiences we shared during the entire project period.

Lastly, I thank Busitema University for giving me the opportunity to pursue this program, long live and continue to pursue excellence.

TABLE OF CONTENT

Contents

ABSTRACT.	1
DECLARATION.....	i
APPROVAL.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
LIST OF ABBREVIATIONS.....	ix
1.0 CHAPTER ONE: INTRODUCTION:.....	1
1.1 BACKGROUND:.....	1
1.2 Problem statement:.....	2
1.3 General objective:.....	2
1.4 Specific objectives:.....	2
1.5 Research Questions :.....	3
1.6 Justification:.....	3
1.7 Significance.	3
1.8 Scope of the study.....	4
2.0 CHAPTER TWO: LITERATURE REVIEW:.....	5
2.1 Description and development of Tylosin:.....	5
2.2 Indication:.....	5
2.3 Mechanism of action:.....	5
2.4 Absorption, distribution, elimination, and withdrawal period:.....	5
2.5 Determination of levels of Tylosin in beef:.....	6
2.5.1. Effects of tylosin residue in beef on human health:.....	7
2.5.2. Methods of determining tylosin levels in beef:.....	7
2.5.3 .High Performance Liquid Chromatography:.....	7
2.6 The acceptability of tylosin residues in beef against WHO/FAO limits:.....	8
3.0 CHAPTER THREE: MATERIALS AND METHODS:.....	9
3.1 Research approach:.....	9
3.2 Sampling design:.....	9

3.2.1 Sample size:	9
3.2.2 Sample collection procedure, storage and transportation.	10
3.3.Operational design :	11
3.3.1. Laboratory analysis:.....	12
3.3.2 Materials and reagents:	12
3.3.3 Preparation of standard solutions:.....	12
3.3.4 Apparatus:.....	12
3.3.5 Sample preparation:	13
3.3.6 Calibration graph:	13
3.4 Statistical design:.....	13
3.5 Data presentation :	14
3.6 Ethical Consideration:	14
3.7 Environmental Considerations:.....	14
3.8 Limitations / Anticipated Problems:	14
4.0 CHAPTER FOUR: RESULTS.	15
4.1Objective 1: Identification of Tylosin in beef ofDokolodistrict.	16
4.2. Objective 2: Comparisons against the MRLs as per the international WHO/FAO limits.	16
5.0 CHAPTER FIVE: DISCUSSION.....	18
6.0 CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS.....	20
6.1. CONCLUSION.....	20
6.2. RECOMMENDATIONS.....	20
REFERENCES	i
APPENDICES	xi
Appendix 1: Budget.....	xi
Appendix 2: Timeline	xii
Appendix 3: Consent Letter/Permission from the university.	xiii
Appendix 4: Photos of the researcher	xiii
i) Sample collection. ii) Laboratory machine.	xiii
Appendix 4: Raw data of Tylosin in ppm.....	xiv

LIST OF FIGURES.

Figure 1. showing the map of Dokolo where samples were taken from.

LIST OF TABLES.

Table 1. Concentrations of tylosin drug residues in beef from Dokolo district.

Table 2. Comparing mean concentrations of Tylosin with FAO/WHO limits using a one sample t-test.

LIST OF ABBREVIATIONS

ADI	Acceptible Daily Intake
Bw	Body weight
EU	European Union
FAO	Food and Agriculture Organization
HPLC	High Performnce Liquid Chromatography
ILCR	Institute of Legal and Constitutional Research
Kg	Kilogram
MAAIF	Ministry of Agriculture, Animal Industries and Fisheries
Mg	Milligram
M μ	Micrometer.
MRL	Maximum Residue Limit
RNA	RiboNucleic Acid
TAL	Tolerable Intake Levels
UBOS	Uganda Bureau Of Statistics
Vd	Volume of Distribution
WHO	World Health Organization
DVO	District Veterinary Officer.
PPM	Parts Per Million.