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TESTICULAR AND SCROTAL ANTIOXIDANT AND STRUCTURAL CHANGES ASSOCIATED WITH MONOSODIUM GLUTAMATE IN MALE WISTAR RATS

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A DISSERTATION SUBMITTED TO THE FACULTY OF AGRICULTURE AND ANIMAL SCIENCES IN PARTIAL FULFILLMENT OF REQUIREMENTS FOR THE AWARD OF A BACHELORS DEGREE OF ANIMAL PRODUCTION AND MANAGEMENT OF BUSITEMA UNIVERSITY

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DECLARATION

I Orode Timothy declare that this study has never been submitted to any other academic institution locally and internationally and it's a result of the work conducted by myself with my supervisors.

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Date…… Signature……

This dissertation has been submitted with approval of my academic supervisors;

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DEDICATION

I would love to dedicate this report to my parents for the tireless efforts you have made to ensure that you invest in this academic venture. There is nothing worthy I can pay you with but only the almighty God is the only one to reward you.

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TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

MDA	MALONDIALDEHYDE
MMOL/L	MILLIMOLE PER LITER
MSG	MONOSODIUM GLUTAMATE
TBA	THIOBARBITURIC ACID
TBARS	THIOBARBITURIC ACID REACTION
TCA	TRICHLOROACETIC ACID
WGT	WEIGHT

ABSTRACT.

Monosodium glutamate a white crystalline powder, is the sodium salt of a naturally occurring nonessential amino acid, glutamic acid. It contains 78% of glutamic acid and 22% of sodium and water. MSG is commonly marketed as a flavor enhancer and is used as a food additive particularly in West Africa and Asian dishes. This study was aimed at assessing the role of Monosodium glutamate in modulating testicular and scrotal Tissue calcium levels, antioxidant activity and histopathological changes in Male Wistar Rats. The study was an experimental study involving 30 adult 7 week old male Wistar rats. Rats were kept for a total of 30 days and killed at the end. Quantitative data was analysed using Graph Pad prism version 6 and expressed as mean ± SD. Multiple comparisons using a Tukey's test was used to determine significance and for all tests, a $P \leq 0.05$ was considered significant, and different superscripts were used to represent presence of significant differences. Information was presented in form of tables, graphs, and photographs. Qualitative data from the histological analysis was descriptively analyzed and presented in paragraphs. The calcium levels were 1.27mMol in scrotum following high dosage treatment through the sub-cutaneous route and it was 1.21 mMol following feed supplementation, and no significant differences were found in scrotal tissue. In the testis, calcium levels were 1.16 mMol in the sub-cutaneous treatment groups while in feed supplementation it was 1.21mMol at highest feed supplementation group. The study showed that administration of Monosodium Glutamate at low concentrations did not interfere with basic biochemical and physiological functions as well as histomorphological nature, thus re-validating the usage of MSG at low concentrations in humans. The inability of the study to reproduce toxic effects reported in previous studies show that a lot remains to be done. Monosodium Glutamate is safe for human consumption under internationally recommended concentrations and more studies to show its ability to modulate gene expression remain to be established.