



Ain Shams University
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***Sensitivity of Lead and Cadmium Exposure on
Some Constituents of Blood and Testicular
Functions in the Male Rats and the Therapeutic
Role of Vitamin C or Zinc and Their Mixture
Supplementation***

***Submitted in partial fulfillment for the requirements
for the degree of
Master of Science in Zoology***

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كلية البنات للآداب و العلوم و التربية

قسم علم الحيوان

حساسية التعرض للرصاص و الكاديوم علي بعض مكونات الدم ووظائف الخصية في ذكور الجرذان والدور العلاجي لإضافة فيتامين ج أو الزنك وخليطهما

رسالة مقدمة من

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باحث - بجهاز شئون البيئة - رئاسة مجلس الوزراء

للحصول على درجة الماجستير في العلوم

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List of Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ACTH	Adrenocorticotropin hormone
ALA	aminolevulinic acid
ALA-D	aminolevulinic acid dehydratase
ANOVA	Analysis of variance
ATSDR	Agency for Toxic Substances and Disease Registry
BSA	Bovine serum albumin
Ca	Calcium
Cd	Cadmium
CDC	Centres for Disease Control
CO₂	Carbon dioxide
CPM	counts per minute
Cu	Copper
CytoP₄₅₀	Cytochrome P₄₅₀
DA	Dopamine
DHEA-S	dehydroepiandrosterone sulphate
DNA	Deoxyribonucleic acid
EDTA	Ethylene diamine tetracetic acid
EPA	Environmental Protection Agency.
Fe	Iron
FEP	free erythrocyte protoporphyrin
Fig.	Figure
FSH	Follicle-stimulating hormone
GH	Growth hormone
GIT	Gastrointestinal tract
GnRH	Gonadotropin-releasing hormone
GTP	glutamyl transpeptidase
H₂CO₃	Carbonic acid
H₂O	Water
H₂O₂	Hydrogen peroxide
H₂S	Hydrogen sulphate

List of Abbreviations

Hb	Haemoglobin
Hb- F	fetal haemoglobin
HCl	Hydrochloric acid
HDL	High density lipoprotein
HOCl	Hypochlorous acid
Ht	Haematocrit
5-HT	Serotonin
HTPTA	hypothalamic-pituitary- testis axis
IARC	International Agency for Research on Cancer
LDL	Low density lipoprotein
LH	Luteinizing hormone
LHRH	Luteinizing hormone releasing hormone
LPO	Lipid peroxidation
MCHC	Mean cell haemoglobin concentration
MCV	Mean cell volume
MDA	Malondialdehyde
Min.	Minimum
Mix.	Maximum
Mn	Manganese
NADP⁺	Oxidized form of nicotinamide adenine dinucleotide phosphate
NADPH	Reduced form of nicotinamide adenine dinucleotide phosphate
NE	Norepinephrine
NRC	National Research Council
NSB	Non-specific bind
NTP	National Toxicology Program
O₂⁻	Super oxide radical
OFR	oxygen free radicals
OH.	Hydroxyl radicals
OHCl	Hypochlorite radical
PAP	prostatic acid phosphatase
Pb	Lead
PCV	Packed cell volume

List of Abbreviations

PGF_{2α}	prostaglandin F_{2α}
PSA	Prostatic specific antigen
RBC_s	Red blood corpuscles
RIA	Radioimmuno assay
ROS	Reactive oxygen species
SOD	super-oxide dismutase
SOPR	Sperm-oocyte penetration rate
STD	standard
STFS	Serum transferrin saturation
T₃	Tri-iodothyronine
T₄	Thyroxin
TIBC	Total iron binding capacity
TSH	Thyroid stimulating hormone
UIBC	Unsaturated iron binding capacity
unk	Unknown
Vit. C	Vitamin C
VLDL	Very low density lipoprotein
WBC_s	White blood corpuscles
WHO	World Health Organization
XRF	x-ray fluorescent
Zn	Zinc

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