



***Alpha lipoic acid versus N-acetyl cysteine in protection  
against fenpyroximate induced toxicity  
in albino rats***

**Thesis**

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and Clinical Toxicology**

**By**

**Amr Reda Zaki Ali**

Assistant lecturer of forensic Medicine & Clinical Toxicology,  
Faculty of medicine- Beni-suef University

Under supervision of

**Prof. Dr. Mervat Hamdy Abdel Salam**

Professor of forensic Medicine & Clinical Toxicology,  
Faculty of medicine-Cairo University

**Prof. Dr. Amany Mahmoud Ahmed**

Professor of forensic Medicine & Clinical Toxicology,  
Faculty of medicine-Beni-suef University

**Prof. Dr. Manal Elsayd Elhalwagy**

Professor of Biochemistry department of mammalian toxicology,  
Central Pesticide laboratory

**A. Prof. Dr. Dina Helmy Mohamed**

Assistant Professor of histology,  
Faculty of medicine-Cairo University

**Faculty of medicine  
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## Abstrac

**(key words:** fenpyroximate, oxidative stress, lipid peroxidation , endocrine toxicity and natural antioxidant ).

This thesis was designed to study and investigate the endocrine disrupture effect of fenpyroximate pesticide and the potentiality of each of alpha lipoic acid and N-acetylcysteine in attenuating the toxicity of fenpyroximate. 90 males of albino rats weighed(150gm) and (3 month age ) will be divided into nine 9 main groups (10 rats in each) according to type and dose that rats intake. Group (1) served as control, Group (2) rats were orally treated with antioxidant alpha lipoic acid (ALA), Group (3) rats were orally treated with antioxidant N-acetyl cysteine (NAC),Group (4) rats were orally treated with high dose of pesticide, Group (5) rats were orally treated with (ALA ) after administration of high dose of pesticide, Group (6) rats were orally treated with antioxidant (NAC) after administration of high dose of pesticide, Group( 7) rats were orally treated with low dose of pesticide , Group (8) rats were orally treated with antioxidant (ALA) after administration of low dose of pesticide , Group (9 ) rats were orally treated with antioxidant (NAC) after administration of low dose of pesticide . All groups were force fed by gastric intubation for 14 and 28 days. The oxidative stress status of treated animals has been evaluated by assessment of total ATPase , total antioxidant activity, SH-Protein and malondialdehyde (MDA), the thyroid function markers (T3, and T4 ), pancreatic function markers (amylase, lipase, insulin and glucose), in addition cholesterol and protein were measured . Our result revealed that fenpyroximate induce inhibitory effect on total antioxidant activity, SH-Protein activity and increased in lipid peroxidation (MDA). The results showed also disturbances in thyroid and pancreatic markers. In addition , our result revealed that natural antioxidants (ALA and NAC) have more or less counteracting effect on oxidative stress , endocrine toxicity caused by fenpyroximate.

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# LIST OF ABBREVIATION

<b>ALA</b>	Alpha Lipoic acid
<b>ADI</b>	Accepted daily intake
<b>ATP</b>	Adenosine triphosphate
<b>DHLA</b>	Dihydrolipoic acid
<b>DA</b>	Dopaminergic neurons
<b>EPA</b>	Environmental Protection Agency
<b>EDC</b>	Endocrine Disruptor Chemical
<b>FMN</b>	Flavin mononucleotide
<b>2Fe-2s</b>	Binuclear iron sulphur cluster
<b>4Fe-4s</b>	Tetranuclear iron sulphur cluster
<b>GSH</b>	Reduced glutathione
<b>GSSG</b>	Glutathione disulfide or oxidized glutathione
<b>GSH-Px</b>	Glutathione peroxidase
<b>GSH</b>	Glutathione
<b>GST</b>	Glutathione-S-transferase
<b>GR</b>	Glutathione reductase
<b>GCL</b>	Glutamate cysteine ligase
<b>GSH/GSSG</b>	Oxidised glutathione or glutathione disulphide
<b>γ-GT</b>	Gamma Glutamyl transferase
<b>HPT</b>	Hypothalamo pituitary thyroid

<b>HP</b>	High dose of pesticide
<b>K</b>	Potassium
<b>LD50</b>	Lethal dose in 50% of animals
<b>LP</b>	Low dose of pesticide
<b>MDA</b>	Malonidealdehyde
<b>N2</b>	Iron sulphur cluster
<b>NO., ONOO</b>	Nitrogen centered
<b>NAC</b>	N-acetyl-L-cysteine
<b>NA</b>	Sodium
<b>NADH</b>	Nicotineamide adenine dinucleotide
<b>NADP</b>	Nicotinamide Adenine Dinucleotide Phosphate
<b>O2</b>	Singlet oxygen
<b>OH</b>	Hdroperoxyl radicals
<b>R., RCOO</b>	Carbon-centered
<b>ROS</b>	Reactive oxygen species
<b>SN</b>	Substantia nigra
<b>TSH</b>	Thyroid stimulating hormone
<b>T4</b>	Tetraiodothyronine
<b>T3</b>	Triiodothyroinine.
<b>TAC</b>	Total Antioxidant Capacity
<b>TCA</b>	Trichloroacetic acid
<b>TBA</b>	Thiobarbituric acid

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