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Gross and Histopathological Study of Kidney, Liver, Spleen and Testis in Male Albino Rats by Thiram Induced Toxicity

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Abstract

The present investigation was undertaken to study the gross lesions and histopathology of kidney, liver, spleen and testis due to Thiram induced toxicity in male Albino rats. The study was carried out on twenty-four male albino rats and approved by Institutional Animal Ethical Committee (IAEC)

in the Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Mhow. For collection of organs the rats were given euthanasia in ether chamber after the completion of experiment to study gross and histopathological changes.

Keywords: Liver, Kidney, Thiram, Rats, Congestion

Introduction

The toxic effect of thiram in rats, mice, and rabbits causes apathy, paralysis of the extremities, cyanosis, decreased temperature, and slowed respiration and death occurs within 2 days (Sheftel 2000) ^[3]. Thiram shows typical symptoms such as liver enlargement and dysfunction, hepatitis, degenerative changes, and focal necrosis in thiram exposed workers and test animals (Maita *et al.*, 1991) ^[2]. Thiram caused degenerative and dystrophic changes in the liver, kidneys, and heart, hemorrhages and ulcerations of the gastric mucosa, hemodynamic disturbances in the brain, parenchymatous organs and GI tract in thiram fed rats, mice and rabbits (Sheftel, 2000) ^[3].

Materials and Methods

The present study was carried out in the Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Mhow, (M. P.). The study was carried out on twenty-four male albino rats and approved by Institutional Animal Ethical Committee (IAEC). The rats were procured from Divya Laboratory Animal House Shivaji Market, Indore.

After recording the gross lesions the tissues from affected organs like liver, kidney, brain, spleen and testis were collected from sacrificed animals and subsequently preserved in 10% neutral buffered formalin for at least 24-48 hours. Further these tissues were processed by routine method of dehydration in graded alcohol, clearing in xylene and embedding in paraffin. Sections of 5-6 μ thickness were processed by conventional procedures using routine Haematoxyline and Eosin staining to study the general histopathological alterations (Luna, 1968) ^[1].

The tissue which was previously fixed in 10% neutral buffered formalin and was processed for histopathology as per the procedure described by Luna (1968) ^[1]. Histopathology of the Liver, Kidney, Spleen and Testis was done.

Results and discussion

The gross lesions of thiram toxicity, liver was slightly enlarged and congested with a few hemorrhages on its surfaces. Kidney was congested and swollen. There was enlargement of spleen.

The histopathological observations of kidneys in thiram treated rats showed congestion, vacuolar degeneration of tubular epithelium, there were hyaline masses inside the renal tubules. Histopathologically liver showed congestion in hepatic parenchyma, vacuolar degeneration, mild fatty changes, hypertrophy of hepatocytes, dilation of central vein and increased sinusoidal spaces. Hepatocytes showed necrobiotic changes. Histopathologically testes revealed partial to complete arrest of spermatogenesis with vacuolation. Seminiferous tubules showed wrinkled basement membrane along with increased inter tubular space. The histopathological changes in spleen showed varying degree of vascular changes, characterized by congestion with engorgement of blood vessels.

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changes in the thiram fed groups. Similar changes were observed by S. Subapriya *et al.*, 2007) in broilers when fed thiram 0, 15, 30 and 60 ppm for 28 days.



Plate 1: Different organs of rat studied for gross and histopathology



Plate 2: Different organs of rat studied for gross and histopathology showing enlargement and congestion

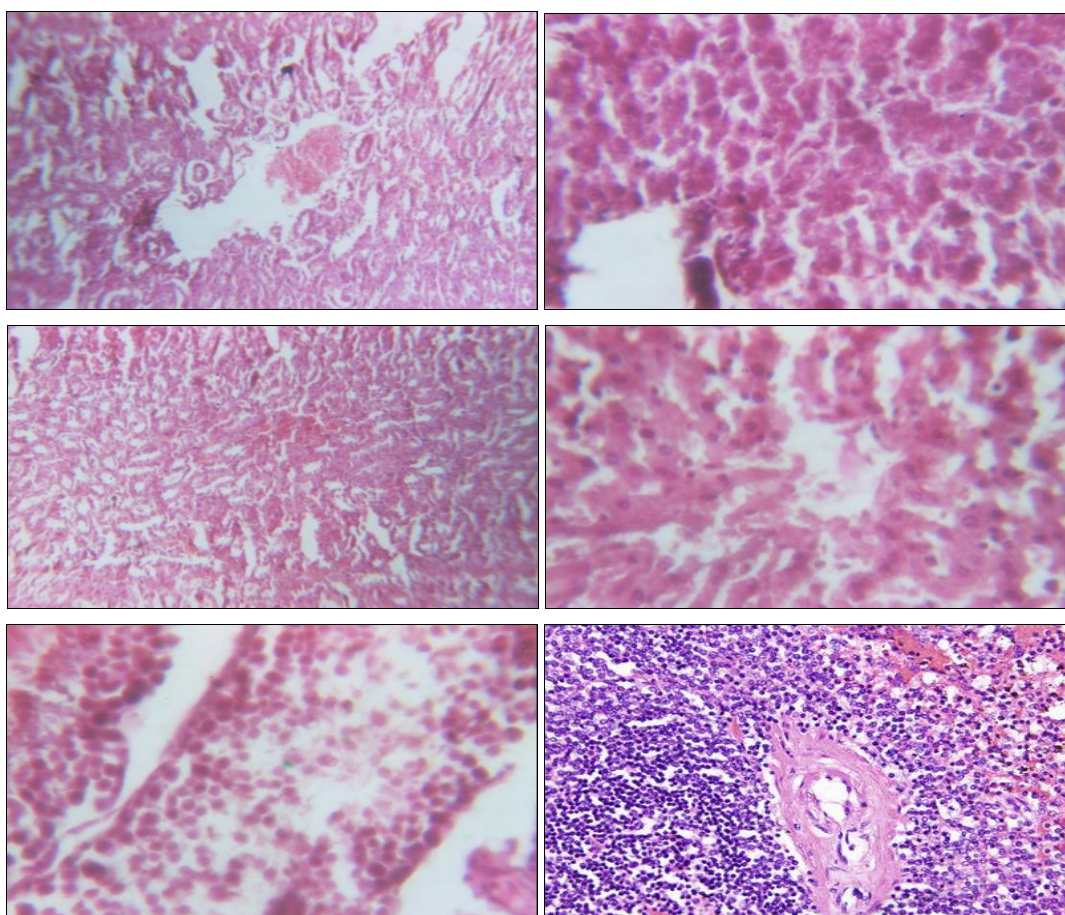


Plate 3: Different microphotograph showing different histopathological changes recorded in the Thiram induced toxicity in Albino rats

Conclusion

The present study indicate that the Thiram induced toxicity is responsible for gross and microscopic changes in liver, kidney, spleen and testes of Albino rats.

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