

# Dietary Long-Term Exposures to Fipronil Alter the Expression of Catalase in Lung and Serum

Rajveer Kaur<sup>1</sup>, Rajdeep Kaur<sup>2</sup> and R.S Sethi<sup>3\*</sup>

<sup>1</sup>PhD Scholar, College of Animal Biotechnology, Guru Angad Dev Veterinary and Animal Science University, Ludhiana, Punjab, India

<sup>2</sup>Assistant Toxicologist, Department of Veterinary Pharmacology and Toxicology, College of Veterinary Sciences, Guru Angad Dev Veterinary and Animal Science University, Ludhiana, Punjab, India

<sup>3</sup>Professor and Head, Department of Animal Biotechnology, College of Animal Biotechnology, Guru Angad Dev Veterinary and Animal Science University, Ludhiana, Punjab, India

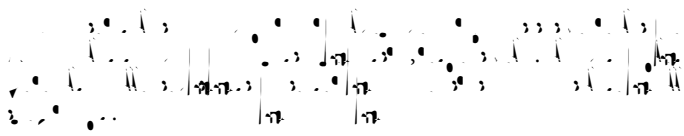
## Abstract

Fipronil is a broad-spectrum insecticide that belongs to the phenylpyrazole chemical family. We have earlier induced lung damage with or without endotoxin remains to be elucidated. The present investigations included male Swiss albino mice (N=36) aging 6-8 weeks to estimate catalase expression in lung and serum following exposure to

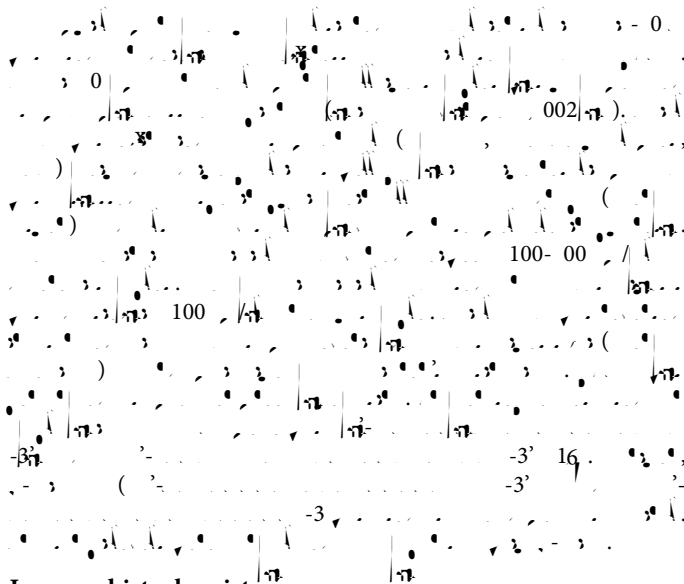
**Keywords:** Fipronil, Catalase, Lung, Serum, Swiss albino mice

## Introduction

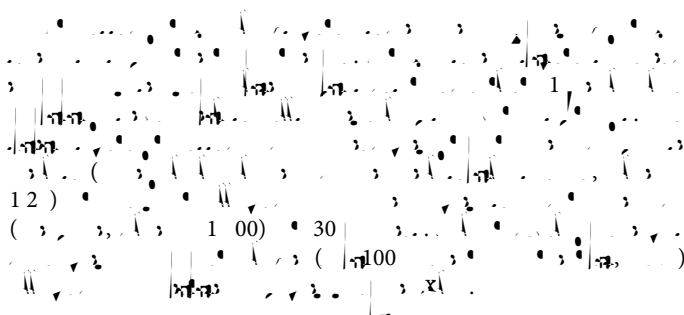
1. Fipronil is a broad-spectrum insecticide that belongs to the phenylpyrazole chemical family. It is widely used in agriculture and household pest control. The present study aims to investigate the effects of dietary long-term exposures to Fipronil on the expression of Catalase in lung and serum of Swiss albino mice. The study was conducted on male Swiss albino mice (N=36) aged 6-8 weeks. The mice were divided into three groups: control, low-dose Fipronil, and high-dose Fipronil. The mice were exposed to Fipronil through their diet for a period of 12 weeks. The expression of Catalase was measured in lung and serum samples. The results showed that dietary long-term exposures to Fipronil significantly altered the expression of Catalase in lung and serum. The high-dose group showed a significant increase in Catalase expression in lung and serum compared to the control and low-dose groups. The low-dose group showed no significant change in Catalase expression. The results suggest that dietary long-term exposures to Fipronil may have adverse effects on the expression of Catalase in lung and serum. Further studies are needed to elucidate the underlying mechanisms and potential health risks associated with dietary long-term exposures to Fipronil.



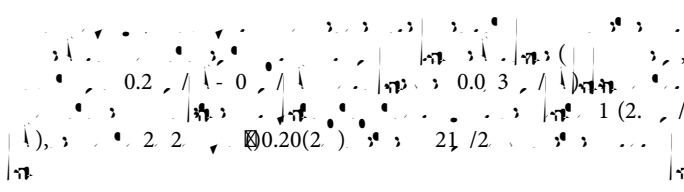
### Quantitative Real Time PCR (qPCR)

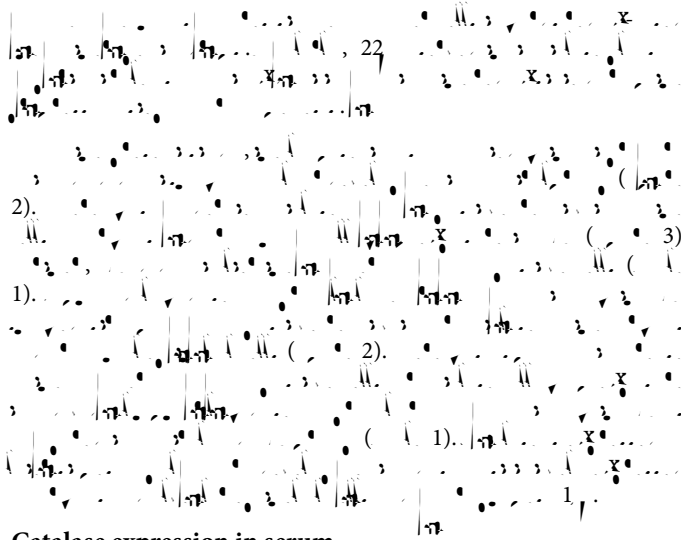


### Immunohistochemistry



### Enzyme-Linked Immuno Sorbent Assay (ELISA)





Catalase expression in serum

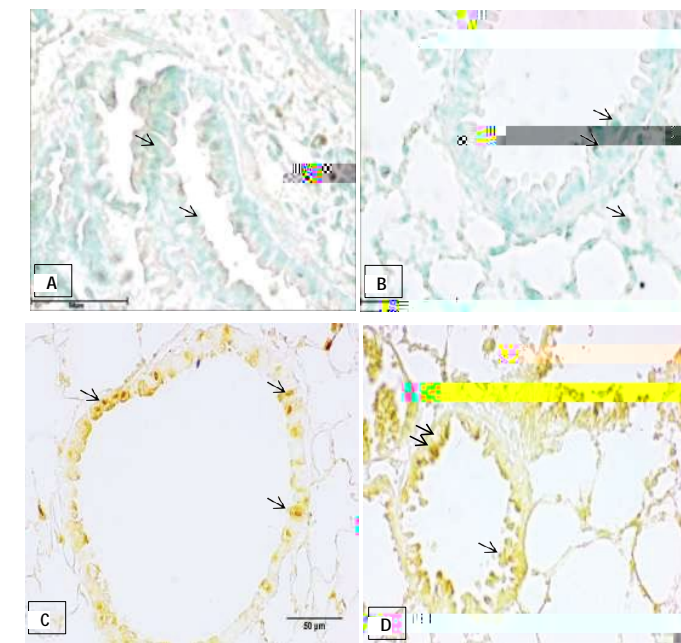
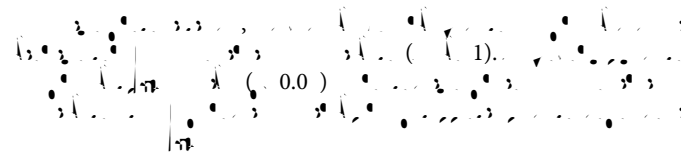


Figure 2:

Table 1:  
groups.

Groups	Number of immunopositive cells	Serum concentration (ng/mL)
Control	a	a
High dose	c	b
	b	a
	99.33 <sup>b</sup>	a
	c	a
	ab	

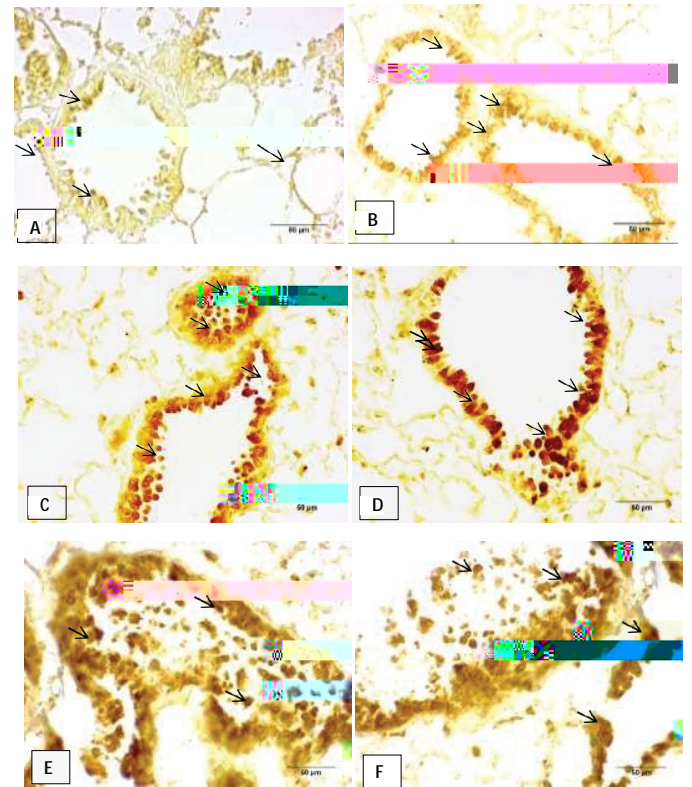
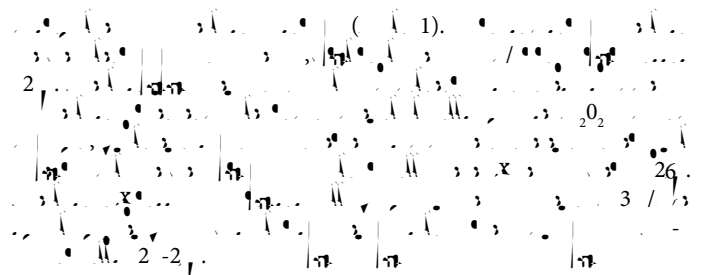


Figure 3:



Acknowledgement

Conflict of Interest

References

mice

3. Chronic exposure to indoxacarb and pulmonary expression of toll-like receptor-9 in mice

Fipronil induces lung *in vivo* and cell death *in vitro*

6.

low dose of lindane and intranasal lipopolysaccharide on respiratory system of mice

8.

9.