



# Comparison of Deferoxamine and Methylprednisolone Protective Effect of Pharmacological Agents on Lipid Peroxidation in Spinal Cord Injury in Rats

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## Introduction

To investigate the protective effect of deferoxamine (DFO) administration in comparison with methylprednisolone (MP) on lipid peroxidation and antioxidants after spinal cord injury (SCI) in rats.

## Methods

Forty Wistar rats were randomly divided into 5 groups as sham laminectomy (n = 8), laminectomy with SCI (n = 8), laminectomy with SCI and 0.9% saline intraperitoneal (i.p.) (n = 8), laminectomy with SCI and 30 mg/kg MP i.p. (n = 8), and laminectomy with SCI and 30 mg/kg DFO i.p. (n = 8). Neurological deficits were examined 24 hours after trauma, and all rats were killed. Spinal cord segments were harvested for both biochemical and histopathological evaluation.

## Results

At 24 hours post-SCI, whereas malondialdehyde levels were increased, superoxide dismutase, catalase, and glutathione peroxidase levels were decreased in groups I, II, and III. MP and DFO treatment decreased MDA levels and increased superoxide dismutase CAT, and glutathione peroxidase levels in control and study groups. There was no statistically significant difference between treatment with MP and DFO (P > 0.05). All rats were paraplegic after SCI, except in the sham group. Histopathological improvement was observed in control and study groups.

## Conclusions

This study indicates that beneficial effects may be provided and further studies need to investigate the dose-dependent beneficial and side effects of DFO in SCI.

**Table 1**

TABLE 1. Logistic Regression Analysis. Comparison Had Been Made Between Group II and Group IV and Also Group II and Group V						
	B	Wald	P	Exp (B)	95% CI for Exp (B)	
					Lower	Upper
MDA						
II-IV	-5.12	4.44	0.03	0.006	0.0001	0.698
II-V	-7.16	3.96	0.04	0.001	0.0001	0.895
SOD						
II-IV	0.24	2.12	0.15	1.275	0.919	1.769
II-V	0.31	2.76	0.09	1.357	0.947	1.945
CPx						
II-IV	0.13	1.97	0.16	1.137	0.951	1.359
II-V	0.50	2.98	0.08	1.649	0.934	2.912
CAT						
II-IV	0.07	1.22	0.27	1.076	0.945	1.226
II-V	0.14	2.45	0.12	1.144	0.967	1.354

MDA indicates malondialdehyde; SOD, superoxide dismutase; CAT, catalase; CPx, glutathione peroxidase; CI, confidence interval.

Logistic Regression Analysis.

## Learning Objectives

To investigate the protective effect of deferoxamine (DFO) administration in comparison with methylprednisolone (MP) on lipid peroxidation and antioxidants after spinal cord injury (SCI) in rats.

## References