

The Effects of Thymoquinone on Nitric Oxide and Superoxide Dismutase Levels in a Rat Model of Diazinon-induced Brain Damage

Halil Beydilli¹, Nigar Yilmaz², Esin Sakalli Cetin³, Yasar Topal⁴, Hatice Topal⁴,
Hamdi Sozen⁵, Irfan Altuntas⁶ and Ibrahim Haki Cigerci⁷

¹*Mugla Sitki Kocman University School of Medicine Department of Emergency Medicine, Mugla, Turkey*

²*Mugla Sitki Kocman University School of Medicine Department of Medical Biochemistry, Mugla, Turkey*

³*Mugla Sitki Kocman University School of Medicine Department of Medical Biology, Mugla, Turkey*

⁴*Mugla Sitki Kocman University School of Medicine Department of Pediatrics, Mugla, Turkey*

⁵*Mugla Sitki Kocman University School of Medicine Department of Infectious Diseases, Mugla, Turkey*

⁶*Suleyman Demirel University School of Medicine Department of Medical Biochemistry, Isparta, Turkey*

⁷*Afyon Kocatepe University Faculty of Arts and Sciences, Afyon, Turkey*

KEYWORDS Diazinon. Thymoquinone. Rat Brain. Oxidative Stress. Nitric Oxide. Superoxide Dismutase

ABSTRACT Diazinon (DI) is an organophosphate. Thymoquinone (TQ) is produced from *Nigella sativa*. This study was a biochemical investigation of the protective properties of TQ as a supportive treatment in brain damage caused by diazinon. Rats were divided into four groups of eight, as follows: Group 1, control; group 2, DI; group 3, DI + TQ; and group 4, TQ. Groups 2 and 3 received DI. Groups 3 and 4 received TQ. In group 2, NO levels were higher and SOD levels were lower compared to the control group. In groups 3 and 4, NO levels were lower and SOD levels were higher than in either the control or group 2. In group 4, DNA damage was lower than in group 2, but the difference between groups 2 and 3 was not significant. The results suggest that TQ, because of its antioxidant properties, can be used to treat oxidative stress caused by DI intoxication.