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Oxidative effects of aluminum on testes and erythrocytes in rats

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Aluminum (Al) is the third most abundant element and the most common metal in the earth's crust. Also, Al has been proposed as an environmental factor that may contribute to free radical-mediated cytotoxicity and reproductive toxicity. Therefore, the aim of this study was to evaluate the effect of Al on oxidative stress status in rat's testes and erythrocyte. For this purpose, forty male rats (F-344) were divided into two equal groups as experimental and control group. The solution of aluminum chloride ($AlCl_3$) was given orally (75 mg/kg/day) to the experimental group daily with a special canule throughout one month. The concentrations of Al in the tissue and erythrocytes samples were analyzed. The activities of antioxidant enzymes such as superoxide dismutase (SOD) and glutathione peroxidase (GPx) as well as the concentration of malondialdehyde (MDA), as an indicator of lipid peroxidation (LPO), were measured in the samples. We found a significant increase in Al concentration in the testes and erythrocyte. Also in the Al-exposed group, antioxidant enzyme activities such as SOD and GPx significantly decreased in testes and erythrocytes samples while MDA levels were higher than control group ($p<0.001$). In the current study, it was concluded that Al had a destructive effect on testes and erythrocytes due to oxidative stress in rats.

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