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INTRODUCTION: Oxidative stress is involved in the development of many chronic degenerative diseases. Therefore, development of drugs having antioxidant potential and the study of their toxicologic effects are of great importance. The biological importance of selenium lead to the development of pharmacologically active organoselenium compounds, such as diphenyl diselenide [(PhSe)₂]. Scientific studies show that this compound has antioxidant, anti-inflammatory and neuroprotective properties, becoming a good candidate for therapeutic purposes. However, an exposure to a high concentration of this compound can cause many toxic effects including DNA damage and decrease in cell viability. Considering that there are no data in the literature about toxicity of diphenyl diselenide in sheep, this study aimed to investigate the cytotoxicity and genotoxicity of (PhSe)₂ in vivo.

MATERIAL AND METHODS: It was administered (PhSe)₂ at concentrations of 0.03, 0.3 and 3 µmol/Kg intravenously in 16 sheeps. Blood samples were taken at different periods during one week. Cytotoxicity was evaluated by Trypan's Blue exclusion test according to Mishcell e Schiingi (1980), and genotoxicity was evaluated by Comet Assay according to Collins (2004), in isolated leucocytes.

RESULTS AND DISCUSSION: Exposure to (PhSe)₂ during one week caused significant decreased in cell viability in the highest concentration tested just at 96 and 144 hours. At the highest concentration, damage levels on DNA increased significantly at 48 hours and decreased at 144 hours and the damage index increased significantly just at 48 and 96 hours. However at concentration of 0.3 µmol/Kg damage levels were significantly different to control at 144h, but the damage index did not altered.

CONCLUSION: Therefore, the results show that (PhSe)₂ caused a significant increase in cytotoxicity and genotoxicity of blood cells from sheep, demonstrating the toxic effects caused by the exposure of this compound at high concentrations. However, after 144 hours, the levels of toxicity decreased significantly.

Word Keys: diphenyl diselenide, genotoxicity, and cytotoxicity.
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