

## EVALUATION OF OXIDATIVE STRESS BIOMARKER LEVELS IN FIREFIGHTERS EXPOSED TO FOREST FIRES IN THE PANTANAL/MT REGION

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**INTRODUCTION:** Climate change contributes to extreme events such as heat waves, fires, droughts, etc. The Brazilian Pantanal faces threats due to economic development, such as the intensification of fishing, livestock farming and deforestation. Fires are a common technique in this region, increasing the risk of large forest fires, which release high amounts of greenhouse gases and particulate matter. Workers fighting to control the fires are exposed to high temperatures and high concentrations of chemical contaminants, which affect health with severe toxic effects. Biomarkers of oxidative stress are indicators of these changes, detecting early damage, which can evolve into more serious health problems. **OBJECTIVE:** Evaluate serum levels of biomarkers of oxidative stress (Malondialdehyde - MDA, Carbonyl proteins - PC, superoxide dismutase - SOD and total antioxidant capacity - CAOT) in workers exposed to smoke from forest fires in the Pantanal/MT. **MATERIAL AND METHODS:** Blood samples were collected from 239 firefighting workers who were in training (CFO) and directly in field actions (Brigadista and Firefighters), from May to October/2023. The analyzes were performed in a microplate reader (UV-Vis spectrophotometry). Statistical analyzes were performed in GraphPad Prism 8. **RESULTS AND CONCLUSION:** The data were aggregated and analyzed according to the group of workers (CFO, Firefighters and Brigadistas) and compared in the exposure period and post (Phase 1 and 2). The data varied between biomarkers and groups, but generally indicate that workers in training/courses (CFO) had lower levels of oxidative stress. Firefighters presented levels with no statistically significant difference between Phases 1 and 2. Brigadiers had greater damage resulting from exposure (Phase 1). The results indicate that the PPE used by firefighters protects better them from toxic smoke and its harmful effects on health. This is not the case for firefighters, who do not have the same protective equipment, generating more oxidative damage. Chronic lung diseases can be aggravated by this redox imbalance, intensified by air pollution. Biomarkers of oxidative stress can improve the prognosis of these diseases and other respiratory infections.

Keywords: Biomarkers; Oxidative stress; Worker's health; Firefighters; Forest fires

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