

Oral Communication 9

## Fighting occupational risks among Portuguese wildland firefighters: looking at cytogenetic effects

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### Abstract

**Background:** Evidence linking wildland firefighters' occupational exposure and health outcomes is still limited. Cytogenetic endpoints have long been applied in the surveillance of human genotoxic exposures and early effects of genotoxic carcinogens. Therefore, it is of utmost importance to clarify the exposure-induced cytogenetic effects concerning wildland firefighters' occupational exposure at different time points (Pre-fire season and fire season). **Objective:** Here, we aim to evaluate the cytogenetic levels in buccal cells among a group of wildland firefighters during a Pre-fire season, considering both the i) influence of self-reported variables (e.g., lifestyle) on buccal micronucleus cytome assay (BMCyt) outcomes and ii) the cytogenetic damage in exfoliated buccal cells considering the estimated inhalation doses to particulate matter (PM) in non-fire work settings. **Methods:** A total of 176 northern Portuguese wildland firefighters (82% males; mean age of  $37.5 \pm 10.9$ ) were recruited during the pre-fire season of 2021. Relevant information was obtained through a self-administered questionnaire. Genomic instability was assessed for 172 northern Portuguese wildland firefighters by BMCyt. PM<sub>10</sub> and PM<sub>2.5</sub> inhalation doses (indoor/outdoor) were estimated for a group of 80 firefighters based on methods described elsewhere [1]. **Results:** Some lifestyle variables (e.g., daily consumption of vegetables) shown to have a protective role on some BMCyt endpoints ( $p < 0.05$ ), whereas others such coffee consumption or being part of Permanent Intervention Teams (full-time firefighters) presented a negative impact ( $p < 0.05$ ). No significant association was found between estimated inhaled doses of PM<sub>10</sub> and PM<sub>2.5</sub> (mean  $1.73 \pm 0.43 \mu\text{g kg}^{-1}$  and  $0.53 \pm 0.21 \mu\text{g kg}^{-1}$ , correspondingly) and BMCyt endpoints. **Conclusions:** The characterization of a population is a very important step to have a broad perspective of the potential risk factors that may influence the studied endpoints in further analysis. Surveillance based on (bio)monitoring programs may be a crucial tool to identify firefighters at high risk for developing adverse health outcomes.

**Keywords:** biomonitoring; occupational exposures; risk assessment

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## References

1. Slezakova, K., et al., Indoor particulate pollution in fitness centres with emphasis on ultrafine particles. *Environ Pollut* **2018**, 233, 180-193.



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