Fire in the Earth System Abstracts
Vol. 2 FES-270
Granada, Spain, 4-8 July, 2023

Protecting Wildland Firefighters' Health: saving the lives of those who fight to save us

[1]Esteves, Filipa, [1]Madureira, Joana, [1]Pires, Joana, [2]Teixeira, João Paulo and [2]Costa, Solange

[1]*EPIUnit - Institute of Public Health, University of Porto, Porto, 4050-600, Portugal*
[2]*Environmental Health Department, National Institute of Health, Porto, 4000-055, Portugal*

Abstract

Climate change and global warming have been contributed to the rise of forest fires across the globe. The proximity of firefighters to wildfires exposes them to a complex mixture of pollutants. In June 2022, occupational exposure as a firefighter was classified as "carcinogenic to humans" by the International Agency for Research on Cancer. However, up to date, very few studies have been focused on the relationship between wildland firefighting occupational exposure and health outcomes. Bio4Fox study aims to characterize wildland firefighters' exposure in a pre- and during a wildfire season to identify a set of appropriate (bio)markers for the surveillance of wildland firefighters' health. We aim to enroll around 200 northern Portuguese wildland firefighters. Here we present some preliminary data characterizing the exposure of these firefighters in the fire stations before the wildfire season. Around 172 northern Portuguese wildland firefighters (141 males and 31 females; mean age of 37.5± 10.9) recruited before the wildfire season of 2021 were enrolled in this analysis. Information on sociodemographic data, lifestyle and occupational exposure was obtained via a comprehensive questionnaire. Genetic instability was assessed in buccal cells through the Buccal Mucosa Cytome (BMCyt) assay. Lower frequencies of micronuclei and pycnotic cells (cell death biomarker) were observed among firefighters taking vitamin supplements and consuming vegetables daily, respectively ($p<0.05$). Being part of Permanent Intervention Teams (full-time firefighters) or part of the Command team, contributed to higher frequencies of cells with condensed chromatin (cell death marker) and karyolitic cells, respectively ($p<0.05$). Our findings will furnish a better characterization of Portuguese wildland firefighters in a pre- wildfire season. We expect to contribute to the implementation of health and safety measures highly needed in this sector.

Keywords: Wildland fires, Firefighters, Occupational Exposure, Biomonitoring

Acknowledgments: This work received financial support from the project PCIF/SSO/0017/2018 by the Fundação para a Ciência e a Tecnologia (FCT), Ministério da Ciência, Tecnologia e Ensino Superior (MCTES) through national funds. Filipa Esteves, the recipient of the Ph.D. grant

UI/BD/150783/2020, is supported by FCT and by the European Social Fund (ESF). Joana Madureira, under the grant SFRH/BPD/115112/2016, is supported by FCT and by ESF, through Programa Operacional Capital Humano (POCH). . Joana Pires is supported by the grant PCIF/SSO/0017/2018. The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) for financial support by national funds in the scope of projects UIDB/04750/2020 and LA/P/0064/2020.