Study finds microplastics in respiratory tracts

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The Foundation for the Promotion of Health and Biomedical Research of Valencia Region (Fisabio) and the Pneumology Foundation of the Valencian Community performed a study at the Hospital General

Universitario of Elche that for the first time discovered microplastics inside the bronchi. The Polytechnic University of Cartagena and the Autonomous University of Madrid also collaborated in the research.

These tiny plastics and fibers of less than five millimeters were found in two out of three bronchoalveolar lavages performed on Pneumology patients, but their results can be extrapolated to the general public. "We are all exposed to the inhalation of microplastics," concludes Dr. Carlos Baeza Martínez, from the Pneumology Service at the Hospital General Universitario in Elche, who led the study.

"Air contamination by microplastics is not as well studied as that of soil or water, although it is a more serious problem than we imagine. Everywhere we look there is plastic. Small fibers are released from the clothes we wear that we can end up inhaling," warns Professor Javier Bayo, from the Department of Chemical and Environmental Engineering of the Polytechnic University of Cartagena (UPCT), where the chemical analyses of the samples were performed, in collaboration with laboratories of the Autonomous University of Madrid.

The results of the study were presented at the 55th Conference of the Spanish Society of Pneumology and Thoracic Surgery (SEPAR), held in June in Pamplona, where it received one of the 2022 SEPAR patient awards.

More microplastics in women

The results of the study show that individuals who have more microplastics in their respiratory system have more pathogenic bacterial growths. "It seems that microplastics could favor the growth of pathogenic germs or facilitate their transport through the air," comments Dr. Baeza. The greater presence of plastics and fibers in the bronchi was also found among those who had more abnormalities in the radiological

tests, a higher rate of obstruction of their bronchi, and worse respiratory function.

The discovery of these microplastics inside the bronchi have been more frequent in women, in people over 60 years of age, in active smokers and in people who have been exposed to higher risk environments, such as workers in sectors like construction, carpentry, shoe manufacturing and electronics.

As for the microplastics and microfibers detected, almost half were viscose rayon, followed in frequency by polyester, cellulose, and cotton.

Ventilation as prevention

Avoiding single-use plastics as much as possible, adequately ventilating interior spaces, using respiratory protection systems in dusty environments or in those where cutting work is carried out, and not smoking are the preventive measures recommended by the authors of the study to reduce the inhalation of microplastics, as well as promoting the reduction of road traffic in cities, since the wearing of vehicle tires generates many of the microplastics present in urban air.

The study has been published in the *Journal of Hazardous Materials*.

More information: Carlos Baeza-Martínez et al, First evidence of microplastics isolated in European citizens' lower airway, *Journal of Hazardous Materials* (2022). DOI: 10.1016/j.jhazmat.2022.129439

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