

EXPAH: Risk assessment of the air pollution mixtures - 'in vitro study'

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AIMS

Assessment of genotoxicity of the complex mixture of organic compounds (extractable organic matter, EOM) associated with respirable urban air particles (particulate matter, PM<10 µm) in human cells cultivated *in vitro*.

Air pollution mixture

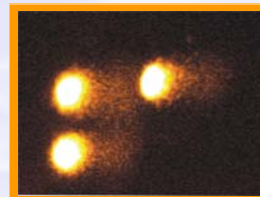
extractable organic matter (EOM) was prepared by dichloromethane extraction of PM10 collected during winter and summer seasons by high volume samplers (HiVol) in three European countries, Czech Republic (Prague, localities **PRG-SM** and **PRG-LB**), Slovak Republic (**Košice**) and Bulgaria (**Sofia**). For evaluation of biological activities of EOMs *in vitro*, EOMs were re-dissolved in DMSO

AIR POLLUTION

Locality	Season	PM10 (µg/m ³)	EOM (µg/m ³)
PRG-LB	summer	26.39	3.72
	winter	38.97	10.86
PRG-SM	summer	36.91	4.96
	winter	62.59	14.93
KOŠICE	summer	24.30	1.67
	winter	57.99	15.30
SOFIA	summer	29.72	3.95
	winter	89.88	24.60



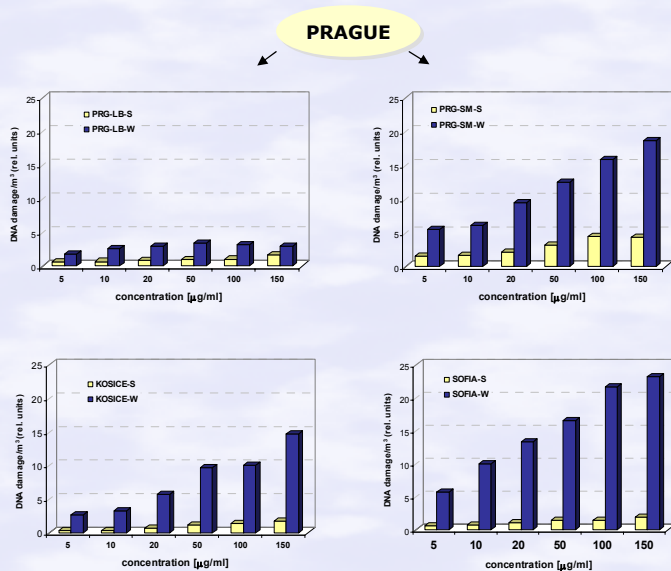
2 h exposure of human cells to EOM



„Nuclei“ of control, unexposed cells. DNA is stained with fluorescent dye, and analysed by a fluorescent microscope (magnification 250x)

„Nuclei“ of human cells exposed *in vitro* to the complex mixture of organic compounds associated with air pollution. DNA damage induced by EOM resulted in DNA migration“. Damaged cells look like „comets“.

GENOTOXICITY OF AIR POLLUTION



Summary

EOM induced dose-dependent increase of DNA damage in human cells *in vitro*.

Highly significant differences in air pollution genotoxicity (EOM µg/m³) were detected between seasons (winter vs. summer) and localities.

Air pollution genotoxicity rose in order:
summer: **PRG-LB**~**KOŠICE**~**SOFIA**<**PRG-SM**;
winter: **PRG-LB**<**KOŠICE**<**PRG-SM**<**SOFIA**;

Oxidative DNA damage does not seem to be a dominant DNA lesion induced by EOM.

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