Primary DNA damage in salivary leukocytes of children exposed to air pollutants. MAPEC_LIFE project

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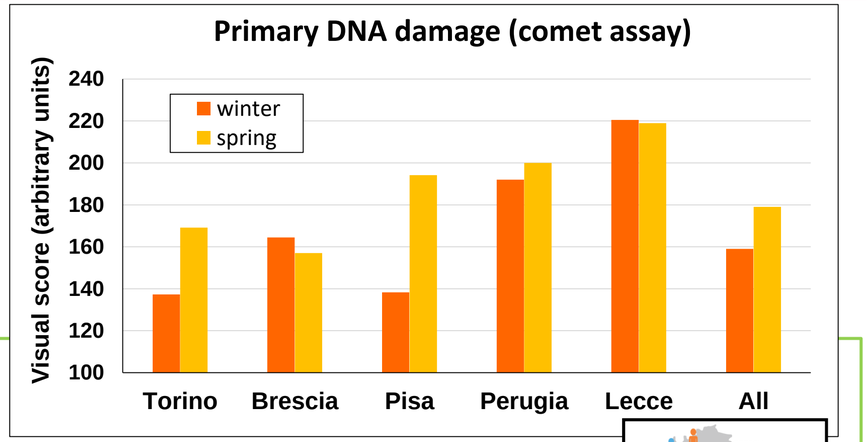
CONCLUSIONS

- levels of primary DNA damage higher in spring than in winter (p<0.001)
- children from different towns had different level of DNA damage (p<0.001)
- positive association between primary DNA damage and some air pollutants, ozone in particular



STUDY DESIGN

Children at primary school

ENVIRONMENTAL EXPOSURE

Collection of PM0.5

chemical analysis genotoxicological test

Data on air quality during all study period (Regional Agency for Environmental Protection)

QUESTIONNAIRES

Collection of information about indoor and outdoor exposure, area of residence, respiratory diseases and drug consumption, BMI, diet, physical activity and other aspects of children lifestyle

Two sampling periods:
WINTER 2014-2015
LATE SPRING 2015

BIOLOGICAL SAMPLING

Collection of salivary leukocytes

Primary DNA damage (Comet assay)

Results

Recruitment:

- 1149 children (6-8 years) were recruited in five Italian towns in two different seasons.

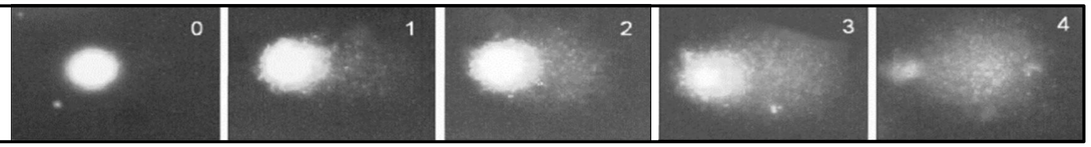
Air pollution exposure:

- levels of main pollutants were higher in the Northern Italy and in winter, except for ozone.

Early biological effects:

- levels of primary DNA damage higher in spring (179.02 au) than in winter (159.00 au, p<0.001);
- statistically significant differences between children from different towns, but only in winter (p<0.001, regression analysis);
- significant positive association with benzene, PM2.5, SO_2 and NO_2, when data of the winter season were considered, and with ozone with both winter and complete data-set;
- no association with socio-demographic and lifestyle features of the children.

Comet assay. Images of the different levels (0-4) of DNA fragmentation observed with the comet assay on salivary leukocytes of children.



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