silver is based on silver ions liberated from metallic silver when in contact with water. The aim of current study was to evaluate the antibacterial properties of silver-thread sock (SUVA AS, Estonia, containing ~7% silver-fiber X-Static®) to different Gram (−) and Gram (+) bacteria. *Escherichia coli (G-) Staphylococcus aureus* (G+) served as models for hygienically important bacteria and two bacterial strains isolated from the environment *Janthinobacterium sp (G-)* and *Microbacterium testaceum (G+)* were used to evaluate the potential impact of the released silver-ions to the bacterial ecosystems. The leaching of Ag-ions from the silver-socks into deionised water and two types of artificial sweat (acid and alkaline) was quantified using AAS and a recombinant bioluminescent Ag-sensor bacterium *E. coli* MC1061 (pSLcueR/pDNPcopAlux). The silver socks had high antibacterial efficiency, probably due to the released Ag-ions whereas the release started immediately after the textile got into contact with water/sweat. By 24 h the release of soluble Ag into the alkaline sweat (pH = 8) was 66 μg Ag/g dwt textile. In the acidic sweat (pH 5.5) the release of Ag-ions was 33% lower, 45 μg Ag/g dwt textile. Testing of the antibacterial potency of the silver-sock material (6 g textile in 1 L deionised water) spiked with four bacterial strains showed the following susceptibility: *E. coli* = *Janthinobacterium sp* > *S. aureus* > *M. testaceum*. The funding was provided by the SmaCell 3.2.1101.12-0017 of National R&D program "Materials technology" and Estonian project IUT23-5.

http://dx.doi.org/10.1016/j.toxlet.2015.08.431

P03-150
Micronuclei frequencies in oral mucosal cells in patients undergoing nickel–titanium orthodontic archwires therapy

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Nickel (Ni) and titanium (Ti), primary components of orthodontic appliances, are routinely used in orthodontic treatment in recent years. However, little is known about the possible genotoxic effects of these appliances with respect to children evaluating as sensitive group. Thus, the aim of this study was to investigate the genotoxic effects of fixed orthodontic appliances in a sample of children patients undergoing orthodontic appliances with micronucleus (MN) test. In this study, right and left buccal epithelial cells were collected from a total of 32 patients before placement and 7th, 15th and 30th days after placement of fixed appliances. The mean MN frequency per 1000 cells were 1.1 ± 0.4 before the treatment (day 0); 3.8 ± 0.3 in day 7; 2.5 ± 0.2 in day 15; and 2.0 ± 0.2 in day 30. Micronucleus frequency significantly increased ($p < 0.001$) in day 7 compared to the control group. While MN frequency in day 15 significantly increased ($p < 0.001$) compared to day 0, but it decreased compared to day 7. MN frequency in day 30 significantly increased ($p < 0.001$) compared to day 0 but decreased compared to days 7 and 15. As a result, using of fixed orthodontic appliances induce increased MN frequency especially in the first weeks of treatment but these genotoxic effects tends to approach baseline levels in later period.

http://dx.doi.org/10.1016/j.toxlet.2015.08.432

P03-151
The buccal micronucleus cytome assay as a tool for the evaluation of air pollution early biological effects in children: Current status of the MAPEC (Monitoring Air Pollution Effects on Children for supporting public health policy) study

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Introduction: Epidemiological studies have found a consistent association between exposure to air pollution, especially to particulate matter (PM), and the incidence and mortality for several chronic diseases such as lung cancer, cardiovascular diseases and diabetes. Among the mechanisms responsible for these adverse effects, genotoxic damage is of particular concern. Children are a high risk group with respect to the short- and long-term effects of air pollution. Indeed recent data suggest that genetic damage occurring early in childhood can increase the risk of chronic diseases, including cancer, in adulthood. The aim of the MAPEC (Monitoring Air Pollution Effects on Children for supporting public health policy) study is to evaluate the associations between air pollution and biomarkers of early biological effects in children, and to propose a model for estimating the global risk of early biological effects due to air pollutants and other factors in children.

Methods and analysis: The micronucleus cytome assay was performed in oral mucosa cells of 6–8-year-old children living in five Italian towns (Brescia, Torino, Pisa, Perugia and Lecce) characterized by different concentrations of air pollutants. About 1000 children were recruited in the study. The buccal mucosa (BM) cells were collected using a normal toothbrush and the cells suspension were washed and then fixed on microscope slides. The slides were stained using the Feulgen method. For microscope analysis the slides were examined under microscope at 100× magnification. BM cells were gathered into the following categories: basal cells, normal differentiated cells, apoptotic/necrotic cells (i.e. condensed chromatin, karyorrhectic, pyknotic, fragmented nucleus and karyolitic), binucleated cells. The biomarkers of genome damage (i.e. micronuclei and nuclear buds) were evaluated only in normal differentiated cells.

Results: In the present work, we present preliminary data relative to sampling performed on winter 2014.

http://dx.doi.org/10.1016/j.toxlet.2015.08.433