



APPLICATION OF THE COMET ASSAY FOR MONITORING DNA  
DAMAGE IN WORKERS EXPOSED TO CHRONIC LOW DOSE  
IRRADIATION

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We examined a group of people professionally at risk of exposure to low doses of ionizing radiation (altogether 49 individuals). Age, smoking habits, use of therapeutic drugs, work-related exposure to hazardous agents, previous exposures to diagnostic X-rays such as patient and nuclear medical examination were registered. For each individual the occupational radiation burden received over the past period of 5 years was taken from the official personal records based on film dosimetry controlled every month. A matched group of controls was chosen among the administrative employees (40 individuals). The mean age of the studied population at the time of blood sampling was 50 years (range 24-69). The individuals were divided into groups according to risk of exposure, smoking habits and gender. We compared the mean tail moments and % of DNA in the tail without enzyme treatment, with endonuclease III and FPG (formamido pyrimidine - DNA - glycosylase) in tested groups.

There was a significant difference (by both above mentioned nonparametric tests) between the control and hazard groups without enzyme treatment but the level of the oxidative base damage was the same in both groups. Higher DNA damage was also found for men than for women. There was no relation of DNA damage to age and smoking habits notwithstanding the enzyme treatment. Additionally, analysis of distributions of tail moment values pointed to a considerable individual diversity even in the control group. Therefore, further investigations are necessary of the stability of the comet assay as biological dosimetry method; the results obtained so far warrant such investigations.