

# THE EFFECT OF CIGARETTES SMOKING ON THE BLOOD COUNTS OF T AND NK CELLS IN SUBJECTS WITH OCCUPATIONAL EXPOSURE TO ORGANIC SOLVENTS

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## SUMMARY

The study was carried out in a population of 139 men, divided into two control groups: 40 non-smokers and 39 smokers not exposed to chemical compounds, and two groups exposed to them: 19 non-smokers and 41 cigarette smokers with occupational contact with organic solvents. The results of toxicological analyses of air and chromatographic analyses of solvents demonstrated the presence of benzene, toluene, xylene and their partly hydrogenated derivatives: paraffin hydrocarbons, oleins, naphthenes (components of painter's naphtha), monohydric and polyhydric alcohols (butanol, cyclohexanol, butylene glycol), esters (ethyleneglycol acetate, butyl acetate) and ketones (methylisobutyl ketone, cyclohexanone).

In the time of the studies the TWA values for benzene were 0 to 38 mg x m<sup>-3</sup> (0 to 12 ppm), with arithmetic mean averages of about 19 mg x m<sup>-3</sup> (6 ppm) and for the level of benzene 0-351 mg x m<sup>-3</sup> (0-110 ppm) with arithmetic mean annual averages of about 48 mg x m<sup>-3</sup> (15 ppm). Mean phenol concentration in the urine of the workers in groups I, II, III and IV respectively was: 7.9 ± 3.5; 10.0 ± 5.8; 16.8 ± 6.2 and 18.4 ± 9.7 mg x l<sup>-1</sup>. Hippuric acid concentration in the urine of the workers in groups I to IV was: 496 ± 326, 538 ± 341, 982 ± 420 and 1107 ± 507 mg x l<sup>-1</sup> respectively. The absolute counts were determined of T-cells (CD 3+), T-helper (CD 4+), T-suppressor (CD 8+) cells and natural killer (NK) cells (CD 16+) in the peripheral blood by indirect immunofluorescence. In the subjects with occupational exposure to organic solvents the counts of T-cells and NK-cells were reduced, and the number of T-suppressor cells was raised which resulted in a decrease of the T-helper/T-suppressor ratio. These changes were more pronounced in cigarette smokers. The assessment of the immunotoxic effect of organic solvents during occupational exposure should take into consideration the possibility of a synergistic action with tobacco and may be of practical use for monitoring the toxic effect of organic solvents on the lymphocyte system.

**Key words:** tobacco smoke, organic solvents, occupational exposure, lymphocytes, T-cells (CD 3+), T-helper (CD 4+), T-suppressor (CD 8+), NK-cells (CD 16+), monoclonal antibodies

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