



© *Kamla-Raj* 2001
PRINT: ISSN 0972-3757 ONLINE: ISSN 2456-6330

Int J Hum Genet, 1(3): 195-202 (2001)
DOI: 10.31901/24566330.2001/01.03.07

Chromosome Damage in Lymphocytes of Stainless Steel Welders

J.S. Yadav, A.S. Yadav and T. Sharma

*Department of Zoology, Kurukshetra University, Kurukshetra 136 119,
Haryana, India*

Fax No. 90-1744-20277 Email: deansc@granth.kuk.ernet.in

KEY WORDS Genotoxicity ; stainless steel welding; mitotic index, chromosomal aberrations, sister chromatid exchanges; satellite association.

ABSTRACT Genotoxic effect of welding fumes generated by Manual Metal Arc (MMA), Metal Inert Gas (MIG) and Oxyacetylene welding on the lymphocytes of 75 welders, 25 from each group and equal number of healthy matched controls, was investigated by studying Mitotic Index (MI), Chromosome Aberrations (CAs), Sister Chromatid Exchanges (SCEs), and Satellite Associations (SAs) The MI showed significant increase in all the three groups (4.25 - 7.66, 4.35 - 7.63, 4.63 - 7.54). The background frequency for CAs was normal (0.88, 0.84, 0.92). It significantly increased in all the three groups (4.68, 3.84, 2.96). Among controls only chromatid gaps and breaks were observed, while chromosome type aberrations could not be seen. Among exposed samples both chromatid type viz. gaps, breaks and isochromatid exchanges and chromosome type aberrations viz. dicentrics, rings, acentric fragments, translocations, chromosome gaps, chromosome breaks and diplochromosomes were observed. The frequency of SCEs also increased (3.98 - 7.84, 4.16 - 4.72, 4.57 - 6.43). However, the increase was significant in group-1 and group-3 welders only. Synergistic effect of smoking and alcohol was noticed in both CAs and SCEs, the frequencies being the highest in smoker-alcoholics and lowest in non smoker - non alcoholics. The CAs and SCEs also revealed correlation with the duration of exposure. The frequencies of SAs also depicted significant increase (4.8 - 13.8, 5.64 - 11.48, 5.56 - 9.28). The D-G type of associations outnumbered all other types. It is concluded that the welding fumes, containing chromium (Cr VI) and nickel, cause considerable chromosomal damage. The welders, in their occupational settings are prone to high genetic risk.

[Home](#)

[Back](#)
