

Evaluation of Genetic Damage in Farmers Exposed to Pesticide Mixtures

Abhay Singh Yadav and Gulshan Sehrawat

*Human Genetics Laboratory, Department of Zoology, Kurukshetra University,
Kurukshetra 136 119, Haryana, India*

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ABSTRACT Environment surrounding us is being polluted day by day by various kinds of chemicals and xenobiotics. Pesticides are one such group, which are toxic in nature yet indispensable as they are used in variety of human activities such as agriculture, aquaculture and household tasks. Excessive dependency on these chemicals is a serious concern today. For the present investigation, a total of 62 individuals including 33 pesticide users (exposed) and 29 non-users (controls) gave blood samples. Comet assay being a highly sensitive and low cost technique was used to assess the level of genetic damage in exposed population. Hundred cells were analysed from each individual and Damage Index (DI) was calculated using various comet parameters such as comet length, tail length, tail area, percentage DNA in tail, tail moment and olive tail moment. The mean duration of exposure to pesticides in farmers was 14.032 years. The mean value of comet length was 94.96 ± 4.22 in exposed cases as compared to 36.56 ± 2.11 in controls. The mean value of tail length was found to be 52.18 ± 3.74 and 7.01 ± 1.47 in exposed and controls, respectively. The mean value of percentage of DNA in tail in exposed and controls was 27.45 ± 1.64 , 9.04 ± 0.67 , respectively. The mean tail area was 19.23 ± 4.75 in exposed and 1.39 ± 0.32 in control individuals. The mean tail moment and olive tail moment were found to be 16.91 ± 2.14 , 15.58 ± 9.07 in exposed and 1.04 ± 0.032 , 1.82 ± 0.32 in case of control individuals. All these comet parameters were found to be statistically significant at 0.005 level using t-test. The percentage of DNA in tail was also found to increase with increase in duration of exposure.