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DNA damage in cigarette and waterpipe smokers: A study on exfoliated buccal cells

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Introduction and aim: Study of DNA damage is a noninvasive method for evaluating the risk of exposing to genotoxic factors. Today, cigarette and waterpipe smoking is a global problem. The aim was to evaluate the genotoxic changes in cigarette and waterpipe smokers by using the nucleus assay in buccal mucosa cells.

Method and Material: The study was a historical cohort. 14 cigarette and 14 waterpipe smokers and 15 individual who had never smoked waterpipe and cigarette included in the study. The mean number of micronucleus was determined in all groups. Feulgen method was used for staining the exfoliated buccal mucosa cells. The total number of nucleus changes per the number of cells with micronuclei were evaluated.

Result: The mean number of micronucleus in cigarette and waterpipe smokers were 13.89±5.92 and 12.57±3.63, respectively. The mean number of micronucleus in nonsmokers was 7.33±2.05. The difference of nucleus changes between cigarette and waterpipe smokers was not significantly different (p=0.23). The difference of nucleus changes in cigarette and waterpipe smokers was significantly higher than nonsmokers (p= 0.0004 and p=0.005, respectively).

Conclusion: The DNA damage in buccal mucosa cells of cigarette and waterpipe smokers is significantly higher than nonsmokers. The cigarette and waterpipe have genotoxic effect on buccal cells.

Keywords: Micronucleus, Feulgen staining, Cigarette smoking, Waterpipe smoking, Exfoliated buccal cells