

ABSTRACT

Background:

The use of tobacco continues to be the leading preventable cause of death in the world. The burden of disease and death that tobacco imposes on the public's health is very extensive. Tobacco is known to have effect on the chemical composition of the cells and the structure of deoxyribonucleic acid (DNA). Among the various techniques, Ostling and Johansson (1984) were the first to quantify the DNA double strand breaks using microgel electrophoresis technique known as single cell gel electrophoresis technique or the Comet assay.

Aim & objective:

To assess the DNA damage in tobacco associated human buccal cells using comet assay.

Materials and methods:

The study subjects were recruited from patient attending Vivekanandha dental college for women in tiruchengode, following standard clinical diagnostic criteria and under their informed consent. Complete medical history and habit of tobacco usage elicited. Study sample size includes 75 study subjects. Each 25 individuals with no history of tobacco usage, with tobacco usage but without oral lesions, Individuals with tobacco associated oral lesions were included. The cytological smears collected from the individuals were used to assess the DNA damage by measuring the tail length in the comet assay method.

Results:

The average tail length in the normal mucosa was 1.46 μ m, tobacco users without oral lesions was 2.86 μ m, lesional site of the tobacco users was 3.86 μ m and non-lesional site was 3.67 μ m. The age, gender and duration and the forms of tobacco had its own impact on the oral mucosa.

Conclusion:

Comet assay helps to assess the subclinical genetic changes of oral mucosa even before the clinical manifestations of the precancerous lesions caused by tobacco usage. Comet assay may bloom out as a novel tool for the prevention of oral cancer in the nearby future.

Keywords: Comet assay, DNA damage, tobacco.