Comet assay assessment of DNA damage in buccal mucosa cells exposed to X-Rays via Panoramic Radiography

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Abstrak

ABSTRAK
Ionizing radiation (IR) presents a risk to human health via DNA damage even when administered at low doses, such as those used in panoramic radiography. Objectives: This study used the comet assay to assess DNA damage in buccal mucosa cells consequent to X ray radiation from panoramic radiography. Methods: Twenty participants were recruited from among patients who underwent panoramic examinations at Prof. Soedomo Dental Hospital, Universitas Gadjah Mada, and divided into two groups of 10. Buccal mucosa cells were collected from all participants before exposure to IR and at 30 min or 24 h after exposure in groups 1 and 2, respectively, and subjected to a comet assay to assess DNA damage. Assay output images were analyzed using OpenComet software. Double-strand breaks (DSBs) were assessed by comparing the percentages of tail DNA in output images obtained before and after X ray exposure. Results: A statistically signifcant (p 0.014) increase in the percentage of tail DNA was observed at 30 min after exposure, but not at 24 h (p 0.29). Conclusion: Panoramic X ray radiation may induce DSBs in human buccal mucosal cells within 30 min after exposure.