Bisphenol-A Release and Genotoxicity Differences of Three Lingual Retainer Adhesives Materials

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Abstrak

Objectives: The objective of the study were to determine if there was any (bisphenol A) BPA release from three adhesive brands, to determine the differences of BPA release between three adhesive brands, to determine the genotoxicity from three adhesive brands, and to determine the correlation of BPA release and genotoxicity. Methods: Three branded adhesives materials were polimerized in mold and immersed in pH 7 and 4 artificial saliva from 24 to 720 hours. The artificial saliva was tested with spectrophotometry test to see BPA release at 24, 240, 480, and 720 hours, then freeze dried to get solid extract. Combination of the extract and lymphocite culture (male and female) then tested with in vitro cytokinesis-block micronucleus (MN) assay to see genotoxicity level of three adhesives at 24, 240, 480, and 720 hours as well. Results: The BPA release occured at 720 hours by Adhesive 1: 0.013μg/L; Adhesive 2: 0.11μg/L; Adhesive 3: 0.036μg/L. There was a statistically significant difference between BPA release with time (F = 505.98; p=0.00) and brands (F = 147.65; p = 0.00). Time and BPA release interaction also showed a statistically significant difference (F=13.35; p=0.00). Genotoxicity can be seen at 720 hours on Flowtain LV sample (MN frequency: male: 0.044; female: 0.053). Conclusion: The number of BPA release of all brand can be seen from the first 24 hours, and were increasing from 24 to 720 hours. Genotoxicity can be seen from one of the adhesive brand at 720 hours.There was correlation between BPA leaching and micronucleus frequency.