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# ASSESSMENT OF THE EFFECT OF DIFFERENT BEVERAGES ON THE COLOUR STABILITY AND SURFACE ROUGHNESS OF AN INDIRECT RESIN MATERIAL – AN IN VITRO STUDY

By

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# ABSTRACT

**Background and Objectives:** With the demand for improved esthetics in dentistry, the use of ceramics and tooth-coloured materials have increased. The surface quality and stain resistance are important attributes in determining the optimum success of such restorations; failures of which, could be reasons for the replacement of restorations.

The objectives of the study were to evaluate the colour stability and surface roughness of an indirect resin material after immersion in different beverages.

**Methods:** A total of 48 specimens were then finished and polished; then they were divided into 4 groups of 12 specimens each, to be immersed into artificial saliva (Group A – control), tea (Group B), aerated drink (Group C), alcoholic beverage (Group D). Baseline readings were obtained on Day 0 (T0) for colour stability ($\Delta E$) and surface roughness (Ra) of all the specimens were recorded. After immersing for 90 days, for 10 minutes each, the final readings on Day 90 (T1) were obtained for all the specimens, after which they were subjected to statistical analysis.

**Results:** The data showed non-normal distribution hence it was subjected to Kruskal-Wallis with post-hoc Mann-Whitney U test and Wilcoxon sign test. Group D showed the maximum amount of colour change ($\Delta E$=1.40) followed by Group C ($\Delta E$=1.10) and B ($\Delta E$=1.00); Group C showed the most effect on the surface roughness (Ra=0.24$\mu$m) followed by Group D(Ra=0.23$\mu$m) and B (Ra=0.10$\mu$m).

**Interpretation and Conclusion:** The indirect resin material exhibited changes after 90 days, on exposure to the staining solutions. However, the values for colour change were found to be clinically acceptable ($\Delta E <= 3.3$) and for surface roughness, the values were within the limits of causing a steep increase in the biofilm formation (Ra $< 2\mu$m). Alcoholic beverages and aerated drinks, among the staining solutions, cause the most discolouration and change in surface roughness, respectively.