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AN INVITRO STUDY TO ASSESS THE EFFECT OF DIFFERENT BEVERAGES ON COLOR STABILITY OF ACETAL RESIN

by

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Dissertation Submitted to the
Rajiv Gandhi University of Health Sciences, Karnataka, Bangalore

In partial fulfillment
of the requirements for the degree of

MASTER OF DENTAL SURGERY (M.D.S)

in

PROSTHODONTICS

Under the guidance of
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S.D.M COLLEGE OF DENTAL SCIENCES AND HOSPITAL
DHARWAD

2010-2013

ABSTRACT

BACKGROUND AND OBJECTIVES: Fabricating an esthetically pleasing removable partial denture while avoiding the unsightly display associated with conventional metallic clasp assemblies often presents a challenge to dentists. Recently, acetal resins have been used as an alternative tooth colored denture base and denture clasp material to improve esthetics. Color stability is one of the most important clinical property of all dental materials. Thus, the purpose of this study was to assess effect of different beverages on color stability of acetal resin and to spectrophotometrically evaluate the color before and after immersion in different beverages.

METHODS: 30 Acetal resin specimens were fabricated and subdivided into three groups according to the solutions used. 10 Specimens were stored in each solution for 30 days. Control Group specimens were immersed in artificial saliva, Group A specimens were immersed in aerated drink and Group B specimens were immersed in tea. Color measurements were made in 3 selected areas for all the specimens using spectrophotometer at 0 and 30^{th} day. Spectrophotometer (I1 Xrite) was used to determine the CIELAB (L*a*b*) parameters before and after immersion of each specimen. The color change (ΔE) values were statistically analysed by One Way ANOVA, Tukey's Post Hoc test and Paired t test.

RESULTS: The color change (ΔE) values for all the groups were Group B> Control Group> Group A in decreasing order. Group B showed maximum color change and Group A showed least color change among the groups.

INTERPRETATION AND CONCLUSION: The effect of staining solutions on the color of acetal resin in all the groups was perceivable by the human eye ($\Delta E>1$); however, the color shifts in all the groups were clinically acceptable ($\Delta E<3.7$) except for group A specimens (Tea), which was not clinically acceptable over time.

KEYWORDS: Acetal resin; artificial saliva; aerated drink; tea; color stability; spectrophotometer.