



## INFLUENCE OF CURING TIME AND BONDING AGENT IN RESPECT TO DISCOLOURATION OF COPOSITE RESTORATION

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### ABSTRACT

**Aim** - to evaluate influence of bonding agent and curing time in regards to discolouration of composite

**Objective** - the objective of the study is to find the effect of curing time and bonding agent in regard to discolouration of composite material

**Background** - dental composite resins are types of synthetic resins which are used in dentistry as restorative material or adhesives. Synthetic resins evolved as restorative materials since they were insoluble, aesthetic, insensitive to dehydration, easy to manipulate and reasonably inexpensive. One of the main disadvantage of light cure is the tendency to discolour in course of time.

**Reason** : this research is carried out to evaluate influence of bonding agent and curing time in regards to discolouration of composite.

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## INTRODUCTION

Tasteful disappointment is a standout amongst the most widely recognized explanations behind the substitution of reclamations. A decent blend of the tooth shading and the underlying shade of the material before curing is a critical clinical element for an effective result. Regardless, this blend must stay after the material is totally cured and all through the reclamation's life-time. Discolouration of tooth-hued, sap based materials might be brought about by inborn or outward factors.<sup>1,2</sup> the inherent components include the discolouration of the tar material itself, for example, the modification of the tar grid and of the interface of the framework and the fillers. Substance discolouration has been ascribed to a change or oxidation in the amine quickening agent, oxidation in the structure of the polymer grid, and oxidation of the unreacted pendant methacrylate groups.<sup>3,4</sup> Outward elements for discolouration incorporate recoloring by adsorption or retention of colorants accordingly of defilement from exogenous sources. The level of discolouration from exogenous sources fluctuates as per the oral cleanliness, the eating-drinking and smoking propensities for the patients.<sup>5,6</sup> The recoloring of polymeric materials by hues arrangements, espresso and tea, nicotine, and drinks has been accounted for in numerous past studies.<sup>1-7</sup> these substances can prompt to yellow-cocoa recolors in teeth and on the surfaces of the gum

composites.<sup>8</sup> The motivation behind this review was to assess the recoloring limit of various sorts of tar based composite materials upon introduction to simulated salivation, tea, coffee, coco cola. The speculation of this review was that recoloring limit of the tar composite materials is identified with the sort of the recoloring arrangement utilized.

## MATERIALS AND METHOD

Materials used were A1 shade composite, LCR unit, stopwatch, bonding agent, coco cola, tea, coffee. 50 composite sample in form of cakes were made of dimension 10mm diameter and 2mm thickness. These 50 samples were divided into 2 groups consisting of 25 samples in each. One set of 25 samples were subjected to curing and on other set bonding agent was applied on the surface of composite. These 25 samples in each set were further divided into 5 sets consisting of 5 samples in each set. Each set of samples were cured then for 10sec, 15sec, 20sec, 25sec, 30sec respectively. After thermocycline These cured composites were kept in coco cola for 30 days, followed by tea for 30 days, followed by coffee for 30 days. Then these samples were observed for discolouration.

## RESULT

The results were grouped into two categories, one with bonding agent on the surface Of composite and the other set without application of bonding agent on the surface of composite. It was observed that the samples without bonding agent showed more discolouration than the

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samples covered with bonding agent. The samples which were cured for shorter time showed more discolouration than the sample which was cured for 30 sec. In the samples without bonding agent it was observed that the sample cured for 10sec got converted from A1 shade to A3 shade, the sample cured for 15sec showed discolouration from A1 to B2 shade, the sample cured for 20sec showed discolouration from A1 to C1 shade, the sample cured for 25sec showed discolouration from A1 to A2 shade, the sample cured for 30sec showed discolouration from A1 to A2 shade. In the samples with bonding agent on the surface it was observed that, the sample cured for 10sec showed discolouration from A1 to B2 shade, the sample cured for 15sec showed discolouration from A1 to A2 shade, the sample cured for 20sec showed discolouration from A1 to B1 shade, the sample cured for 25sec showed discolouration from A1 to A1 shade, the sample cured for 30sec showed discolouration from A1 to A1 shade. These discolouration were observed using study guide.

## DISCUSSION

This study shows that the samples without bonding agent showed more discolouration than the samples covered with bonding agent. The samples which were cured for shorter time showed more discolouration than the sample which was cured for 30 sec. The samples which had bonding agent on the top and were cured for 30 sec showed no characteristics of discolouration. Composite gums are remedial materials that have been broadly embraced for tasteful techniques because of their great properties and force of union to veneer and dentin. Be that as it may, one of their inconveniences is the shading change with time, which is a noteworthy explanation behind supplanting restorations<sup>13</sup>. There are numerous outward and natural elements that impact shading solidness of composite resins<sup>9,10,11,13,15</sup>. Consequences of this review were like those found by Pires-de-Souza, *et al.*<sup>12</sup> (2007) LED hardware additionally demonstrated lower shading changes for a cross breed tar, when contrasted with a customary halogen unit

For coffee, there was a color change in the resin since the first 24 h of immersion, similar to that observed by Yazici, *et al.*<sup>16</sup> (2007), when the same composite resin was examined. This change progressed at each evaluation period. According to Soares, *et al.*<sup>13</sup> (2007) and Villalta, *et al.*<sup>15</sup> (2006), the staining capacity of the composite resin is related to extrinsic factors, such as the pigment agent is subjected to, and to intrinsic factors, such as loading particles and resinous matrix. In this study, the extrinsic factors related to color change were observed. However, the intrinsic factors cannot be left aside, since a recently developed composite resin was used. Topcu, *et al.*<sup>14</sup> (2009) has shown that the effect of the staining solutions might be different for distinct materials and found that a nanofilled composite resin (Filtek Supreme) had the least discoloration among other tested composite materials (Filtek Z250, Charisma and Quadrant).

## CONCLUSION

From this study it is clear that composite without bonding agent showed more discolouration than the composites covered with bonding agent. The composites which were cured for shorter time showed more

discolouration than the composite which was cured for 30 sec. Hence we can conclude that to prevent discolouration composite should be cured for 30sec or more.

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