

## TRACING OF BIOCHEMICAL ACTIVITY OF RESIN MODIFIED GLASS IONOMER VERSUS GLASS IONOMER

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### ABSTRACT

The biochemical activity of resin modified glass ionomer regarding the extent of remineralization capability for enamel and dentin at three different levels (distance tracing) either near to cavity walls (100  $\mu\text{m}$ ), intermediate (400  $\mu\text{m}$ ), and remote faraway from cavity walls (700  $\mu\text{m}$ ) was mapped using direct microdensitometric digital analysis and indirect technique. The assessment was quantitatively using chemical analysis by EDX unit and qualitatively through physical digital analysis. All data was compared to those of glass ionomers and control material (wax). This study showed that the mineral distribution of dentin tissue differed from that of enamel, and its was a location dependant. Glass ionomers showed significantly higher biochemical activity in remote areas than that of resin modified glass ionomer. Both chemical analysis and physical digitized imaging gived a full map and was very informative about mineral distribution around cavity margins of both restorations.

### INTRODUCTION

Recurrent caries around cavity walls and margins could be the most common cause of failure of any dental restorations. Development of new era of fluoride emitting restorative materials which enhance remineralization and inhibit demineralization around restoration margins to reach long lasting and serviceable restoration (Kidd et al, 1997). Fluorides are an important adjunct in prevention of caries, the effectiveness of fluoride releasing materials has always been of high concern to all dental clinician and professions.

Glass ionomers were introduced by Wilson and Kent 1969, developed later during early 1970, first were designed as replacement for silicate cements

then later they have to be proved as a successful material due to their main advantages as fluoride release, translucency, ion active exchange and finally chemical adhesion property to tooth structure (Mount, 1991). So glass ionomer, are considered as potentially caries inhibitory material (Mou and Peters, 1997) due to its fluoride emission (Horsted Bindselv, 1994). Their main indication was restoration of class V cervical cavities and core build up, cavity lining, crown cementation, and material of choice in pedodontics, physical and intellectually disable patients (Cryst and Mount, 1999). There main limitations are moisture and dehydration oversensitivity, in addition to their relatively poor mechanical characteristics.

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