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ePoster Viewing

Preclinical biofilm studies

Effect of aging on the antibacterial activities of bio-active components containing dental adhesives

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Background: In clinical practice resin based composites dominate restorative dentistry in the treatment of dental caries. Much attention has been focused on improvement of the resin composite and the associated dental adhesives, including the antibacterial effect of these materials. The aim of this study was to investigate the antibacterial effectiveness of different bio-active component containing dental adhesives.

Material/methods: Adhesive systems that used in this study are shown in Table 1. Modified Direct Contact Test (DCT) was used to determine the antibacterial activities of bio-active components containing dental adhesives. DCT is based on the bacterial count in 24-well microliter plates. *Streptococcus mutans* ATCC 25175 was used in this study.

Results: There is a statistical difference between the antibacterial activities of adhesive resins that immersed into the bacteria solutions that contains the same amount of bacteria. Amount of bacteria remaining in control group was significantly higher than the Protect Bond and FL Bond II groups ($p < 0,05$). Statistical difference between the other groups were not significant ($p > 0,05$). Protect Bond, FL Bond II and TriS Bond groups showed the only statistical difference the antibacterial activities of adhesive resins that subjected to aging period ($p < 0,05$). Difference between the antibacterial activities of Gluma and aged Gluma groups was significant ($p < 0,05$). There is no statistical difference between other adhesives and their aged groups ($p > 0,05$). Difference between these two groups may results from leaching of the 4-META from polymerized adhesive surface by the time.

Conclusions: Bioactive components such as fluoride, MDPB, 4-META have been reported that have antibacterial effects. In this study MDPB and fluoride containing adhesives showed the most effective antibacterial activity among the other components. This situation was not changed by the aging period. (Figure 1.)

Table 1. Adhesive systems that used in this study

MATERIALS	COMPOSITION	
Protect Bond	Primer	MDP, MDPB, HEMA, Hydrophilic dimethacrylate, Water
	Bond	MDP, Bis-GMA, HEMA, Hydrophobic dimethacrylate, di-camphorquinone, N,N-Diethanol-p-toluidine, Silanated colloidal silica, Surface treated sodium fluoride
TriS Bond	Bond	MDP, Bis-GMA, HEMA, Hydrophilic aliphatic dimethacrylate, Hydrophobic aliphatic methacrylate, Colloidal silica, Sodium fluoride, di-camphorquinone , Accelerators, Initiators , Ethanol , Water
FL Bond II	Primer	Carboxylic acid monomer, 6-MHPA, water, solvent, photo initiator
	Bond	HEMA, UDMA, TEGDMA, S-PRG filler, photo initiator.
Gluma	Bond	Methacrylate, 4-META, Ethanol, Photoinitiators, Glutaraldehyde

Figure 1. Effect of aging on the antibacterial activities of dental adhesives

