



EFFECT OF AFFECTED-CARIES ON THE BOND STRENGTH OF GLASS IONOMER CEMENTS & NOVEL BIOACTIVE MATERIAL TO ROOT DENTIN

BACKGROUND

- Root caries is one of the most common dental problems in the elder population, significantly degrading their quality of life.
- Glass-ionomer cement is a material of choice that can be used effectively even in areas of root caries. Fuji VII® (FV) and Fuji II LC® (FL) are superior in fluoride-releasing ability among the other various types of GICs.
- A novel bioactive material “CAREDYNE™ RESTORE”(CD) was recently developed to improve the antibacterial and demineralization inhibitory effect, by not only releasing fluoride ions but also zinc and calcium ions.
- Most literature reviews on CD were in regards to the ion releasing properties, but there are still minimal research regarding the bond strength.
- Therefore, this study aims to obtain more information about the novel bioactive material on their bond strength to root dentin.

MATERIALS & METHODS

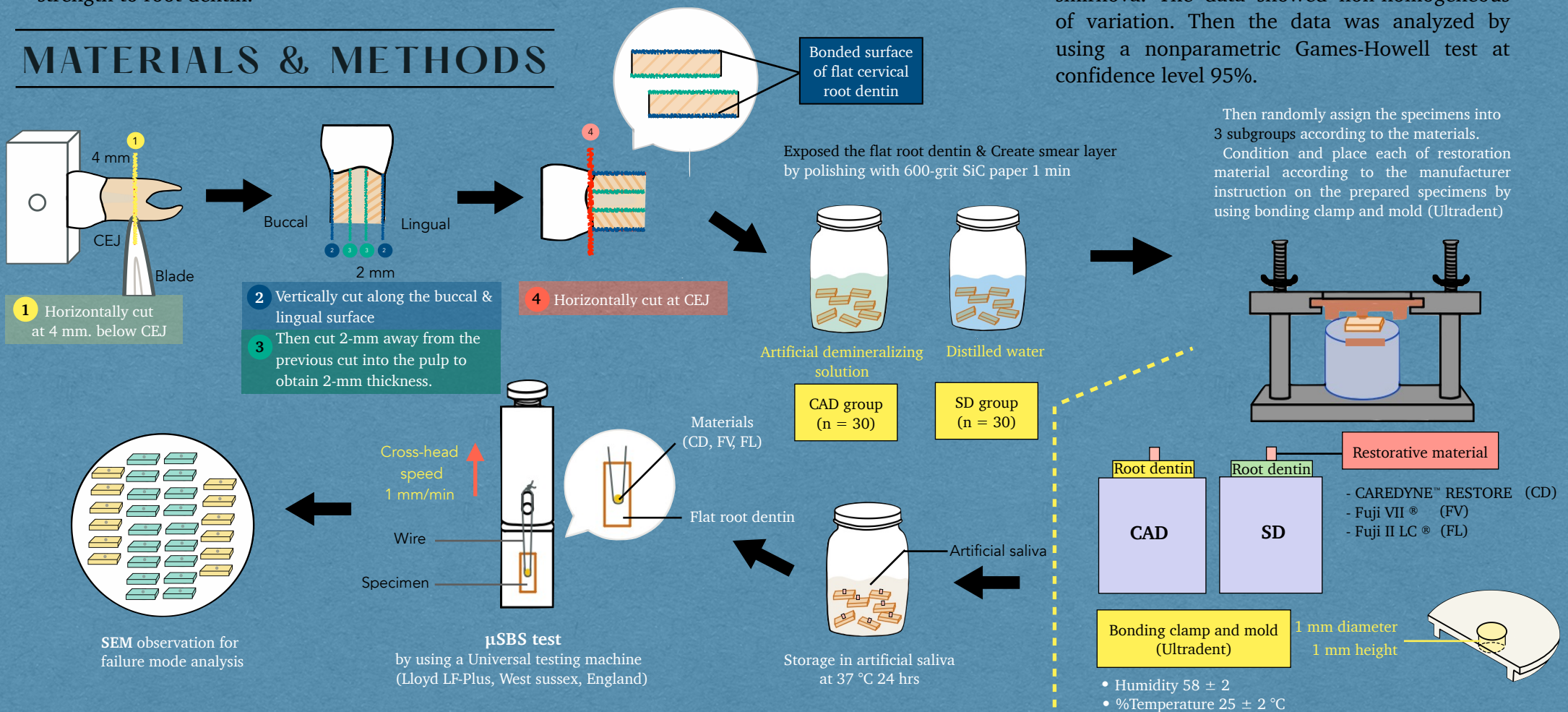


Figure 1 Briefly show experimental groups & methods of this study

RESULTS

The value of FL was significantly higher than those of CD and FV in both conditions, SD and CAD. This current study reveals, when comparing SD and CAD, only the μ SBS of FV was not affected by the type of dentin. In contrast, FL and CD their μ SBS decreased by 50%. The newly developed bioactive material, CD, showed higher μ SBS values on SD compared to FV but on CAD it was lower.

Table 1 show microshear bond strength (μ SBS) values are expressed in MPa (Mean \pm SD), n=10 for each group and pretest failure (PTF) and mode of failure

Material	Dentin substrates		Pretest failure (PTF)	
	SD	CAD	SD	CAD
CD	4.80 \pm 1.3 ^{Bb}	2.35 \pm 0.7 ^{Bc}	0/10	0/10
FV	3.83 \pm 1.7 ^{Bc}	2.45 \pm 1.4 ^{Bc}	1/10	1/10
FL	8.76 \pm 2.7 ^{Aa}	4.97 \pm 1.2 ^{Ab}	0/10	0/10

Different capital letters show significant differences within columns for each material, whereas different small letters show significant differences within rows for each dentin substrate (SD or CAD). (p \leq 0.05).

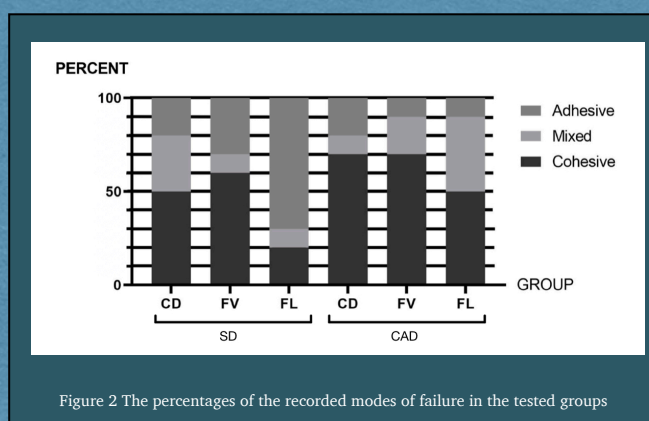


Figure 2 The percentages of the recorded modes of failure in the tested groups

CONCLUSION

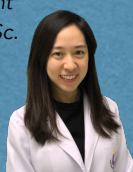
With in the limitation of this study, only the μ SBS values of FV was not significantly affected between SD and CAD. In contrast, FL and CD, their μ SBS values decreased by 50% approximately.

ADVISORS

Dr. Pimpinee Eamsa-ard
DDS., PhD.



Dr. Phanassaya Jaturanont
DDS., MSc.



Sirichai Wiriyaaree
5805033



Tira Lertsatira
5805040



Jiratsaya Kulkiratanich
5905064



Pattaporn Eiamputtharak
5905065



Pattaranan Supattarakul
5905089



Nathravee Ngamsanga
5905092



RESEARCHERS

- Gui, Y., Zhao, X., Li, S., Tang, L., & Gong, X. (2015). [Fluoride release and recharge properties of six restorative materials]. Zhonghua Kou Qiang Yi Xue Za Zhi, 50(1), 28-32.
- Mousavinasab, S. M., & Meyers, I. (2009). Fluoride release by glass ionomer cements, compomer and giomer. Dent Res J (Isfahan), 6(2), 75-81.
- Saunders, R. H., Jr., & Meyerowitz, C. (2005). Dental caries in older adults. Dent Clin North Am, 49(2), 293-308.
- Saad, A., Inoue, G., Nikaido, T., Ikeda, M., M. F., & Tagami, J. (2017). Microtensile Bond Strength of Resin-Modified Glass Ionomer Cement to Sound and Artificial Caries- Affected Root Dentin With Different Conditioning. Oper Dent, 42(6), 626-635.