

Dentin Bond Strength and Monomer Conversion of Adhesive Containing Flavonoids

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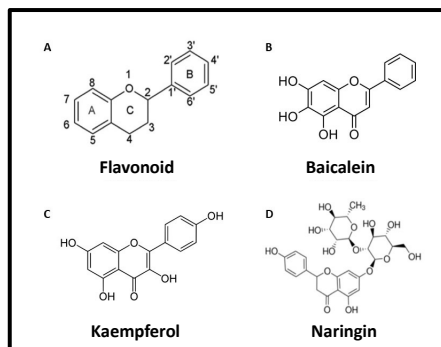
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OBJECTIVES:

To evaluate the effects of three flavonoids added to a commercial universal adhesive on the dentin bond strength after 24 hours or one-year of water storage. Additionally, the influence of the incorporations of such flavonoids on the degree of conversion of the adhesive was determined.

MATERIALS & METHODS:



Control and Experimental Groups

- Alcoholic solutions of 20 mM of baicalein (BA), naringin (NA) and kaempferol (KA) were added to an adhesive (Clearfil Universal Bond Quick, Kuraray Noritake, Japan).
- The Control was the same adhesive without flavonoids.



Addition of flavonoids into a "Commercial Adhesive"

- ✓ BAD 20 mM
- ✓ NAD 20 mM
- ✓ KAD 20 mM

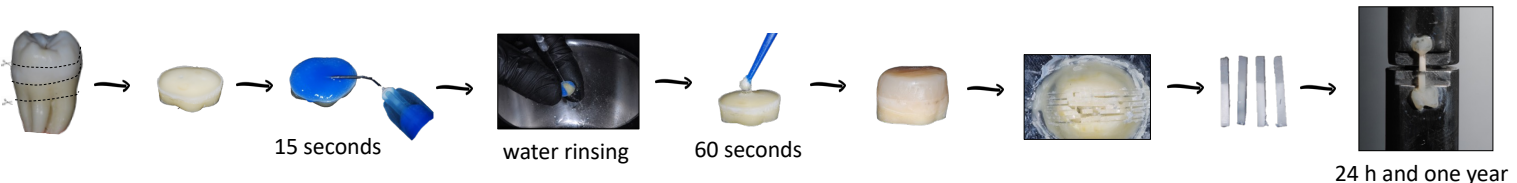
Degree of Conversion Analysis

It was measured using *Fourier-transform infrared spectroscopy* and calculated using standard techniques of observing changes in aliphatic-to-aromatic peak ratios before and after 10 minutes of initiation of light-activation.



Bruker Alpha FTIR Spectrometer (Bruker Optics, Germany)

Dentin Bond Strength



RESULTS:

Table 1. Dentin bond strength results (SD) (in MPa).

Groups	24 hours	One year
Control	51.0 (10.3) a A	39.1 (9.8) a B
Naringin	62.6 (4.9) b A	57.9 (10.1) b A
Baicalein	63.8 (6.3) b A	57.0 (5.4) b A
Kaempferol	65.7 (7.1) b A	55.1 (5.1) b B

Small case letters compare "groups" for the same "evaluation time".
 Capital letters compare "evaluation times" for the same group.
 Two-way ANOVA and Tukey test ($\alpha = 0.05$) (n = 8).

Table 2. Degree of conversion results (SD) (in %).

Groups	Degree of Conversion
Control	45.5 (2.3) a
Naringin	61.3 (3.2) b
Baicalein	51.6 (2.9) b
Kaempferol	53.1 (4.4) b

Small case letters compare "groups".
 One-way ANOVA and Tukey test ($\alpha = 0.05$) (n = 3)

CONCLUSIONS:

The incorporation of flavonoids into the adhesive did not negatively influence the degree of conversion. However, they yielded a significant increase in dentin bond strength with stability after one year of storage in water, depending on the type of flavonoid.