





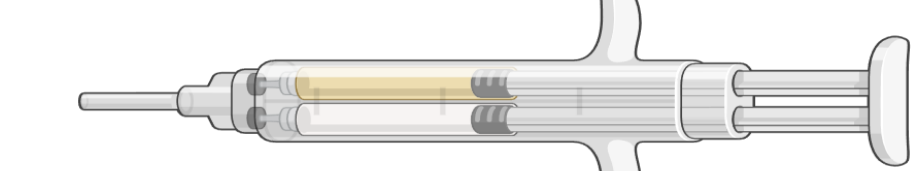
## INTRODUCTION

The esthetic and mechanical performance of resin cement is essential to the success of indirect restorations. Amine-free resin cements generally have improved color stability in comparison to conventional amine-containing resin cements. However, data on other properties of amine-free resin cement is not as well studied as color. Degree of conversion directly relates to a resin's properties.

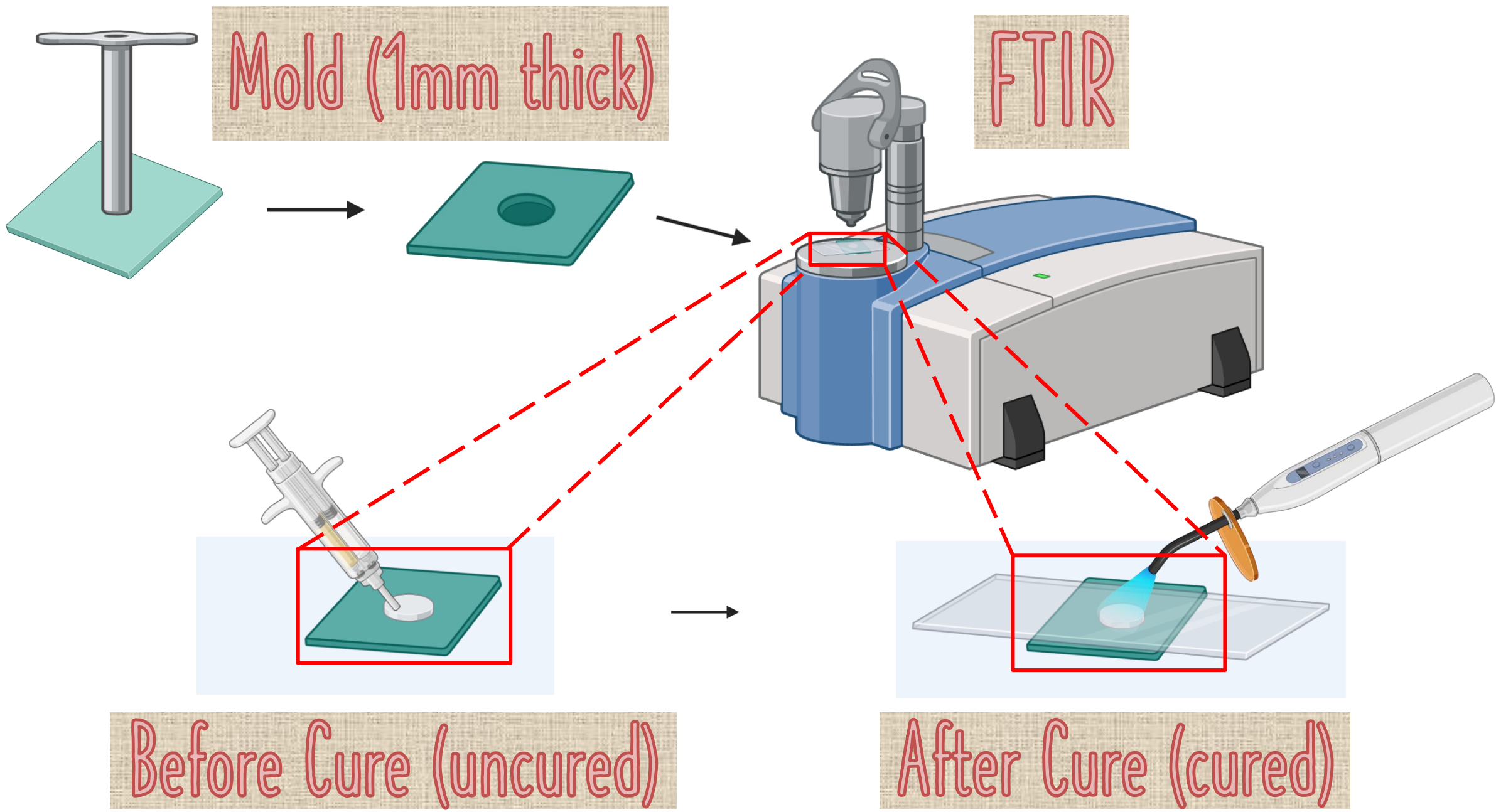
- **This study aimed to evaluate and compare the degree of conversion of commercially available amine-free dual-cure resin cements.**

## METHODS & MATERIAL

- Five amine-free dual-cure resin cements, including Variolink Esthetic DC (Ivoclar), NX3 Nexus DC (Kerr), Panavia Veneer V5 (Kuraray), RelyX Ultimate (3M) and Choice 2 DC (premarket, Bisco) were tested (n=8).

Variolink Esthetic DC	Ivoclar	
NX3 Nexus DC	Kerr	
Panavia Veneer V5	Kuraray	
RelyX Ultimate	3M	
Choice 2 DC (premarket)	Bisco	

- Samples were measured and cured according to manufacturers' instructions, within a mold of 1mm thick.
- The absorbance of each sample was measured before and immediately after curing via FTIR spectroscopy.
  - FTIR allows measurement of carbon-carbon double bond (peak at 1638 cm<sup>-1</sup>) against the internal reference carbon-carbon bonds in the aromatic rings (peak at 1609 cm<sup>-1</sup>) in the resin matrix.



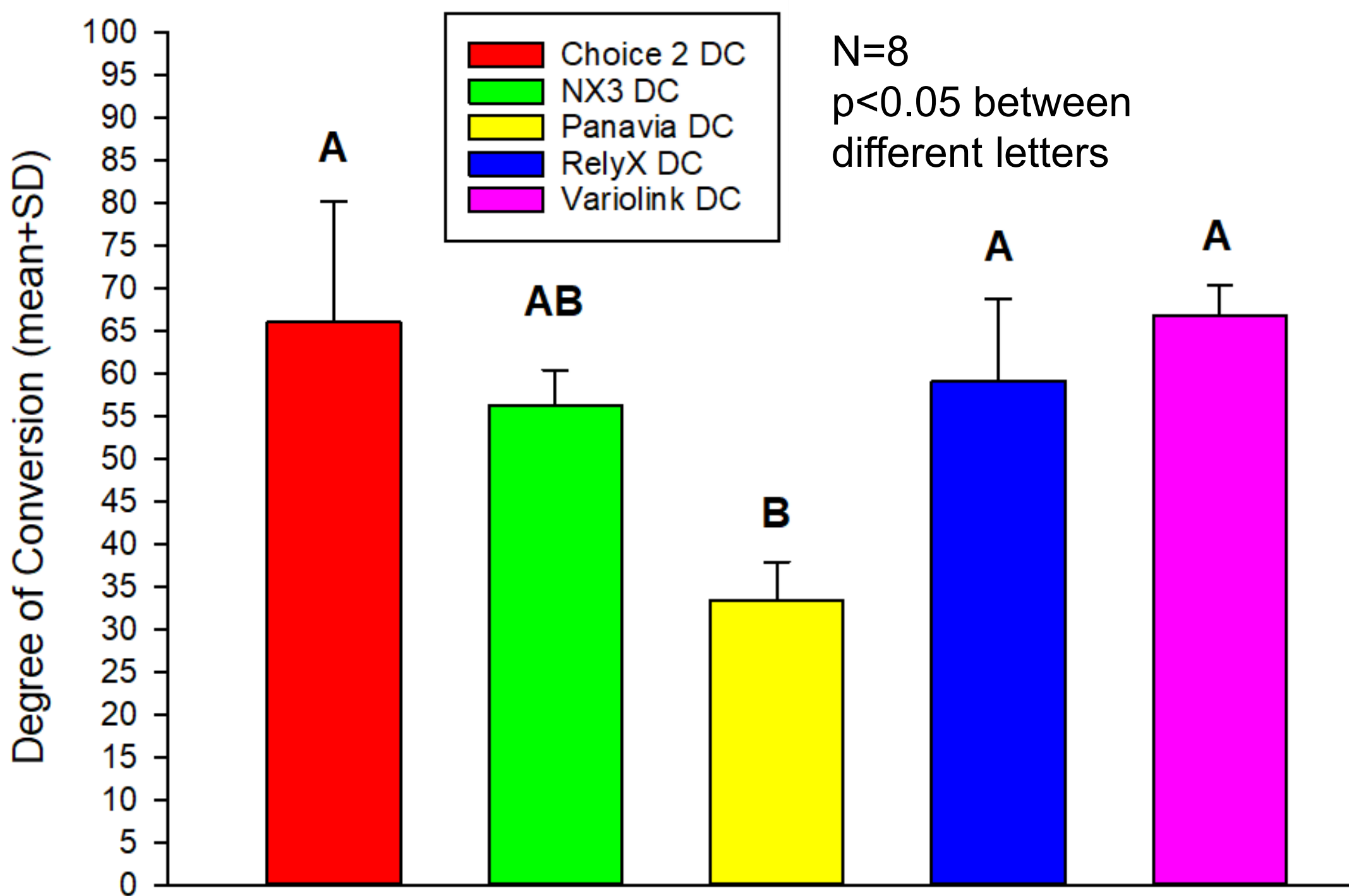
- The degree of conversion (DC) was calculated and expressed as a percentage using formula:

$$DC = \left( 1 - \frac{1638_{cured}/1609_{cured}}{1638_{uncured}/1609_{uncured}} \right) \times 100\%$$

- Kruskal-Wallis one way ANOVA on ranks was performed for statistical analysis with Tukey test as post hoc method ( $\alpha=0.05$ ).

## RESULTS

- Variolink Esthetic DC, Choice 2 DC and RelyX Veneer showed significantly higher degree of conversion than Panavia Veneer V5.
- NX3 Nexus DC had intermediate degree of conversion that was not significant from any other resin cement tested.



## CONCLUSIONS

- Different degree of conversion in tested dual-cure amine-free resin cements may reflect the differences in formulation.
- Although this data may suggest the possibility of differences in mechanical and esthetic properties of these cements, data on extended time after curing and comparisons to light-cure amine-free resin cement are needed and ongoing.
- Future studies on performance of these cements will be beneficial.

## ACKNOWLEDGEMENTS

- We gratefully acknowledge the support of the Midwestern University College of Dental Medicine (CDMI) and Office of Research and Sponsored Programs. This project was financially supported by the CDMI Dean's Research Fellowship.
- We sincerely appreciate BISCO for providing Choice 2 DC (premarket) and Choice 2 as research gifts and Dr. Qiang Ma from BISCO for his technical supports and advisories.
- The authors declare that there is no conflict of interest.

## REFERENCES

Scan for references:

