

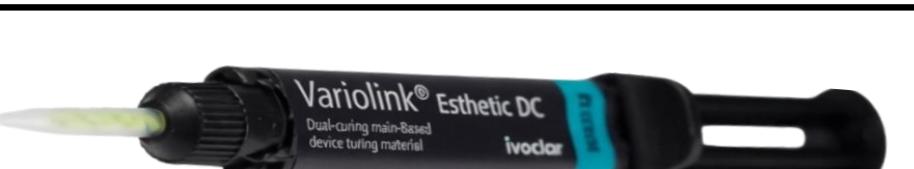
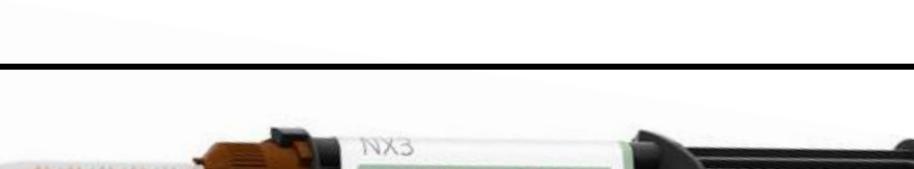
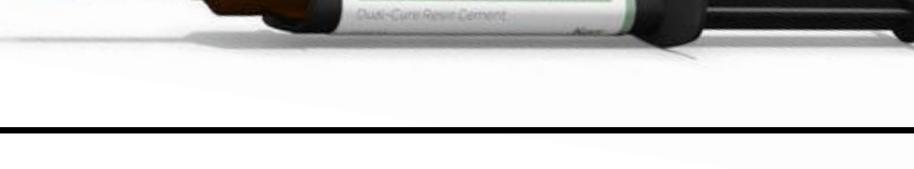
INTRODUCTION

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.

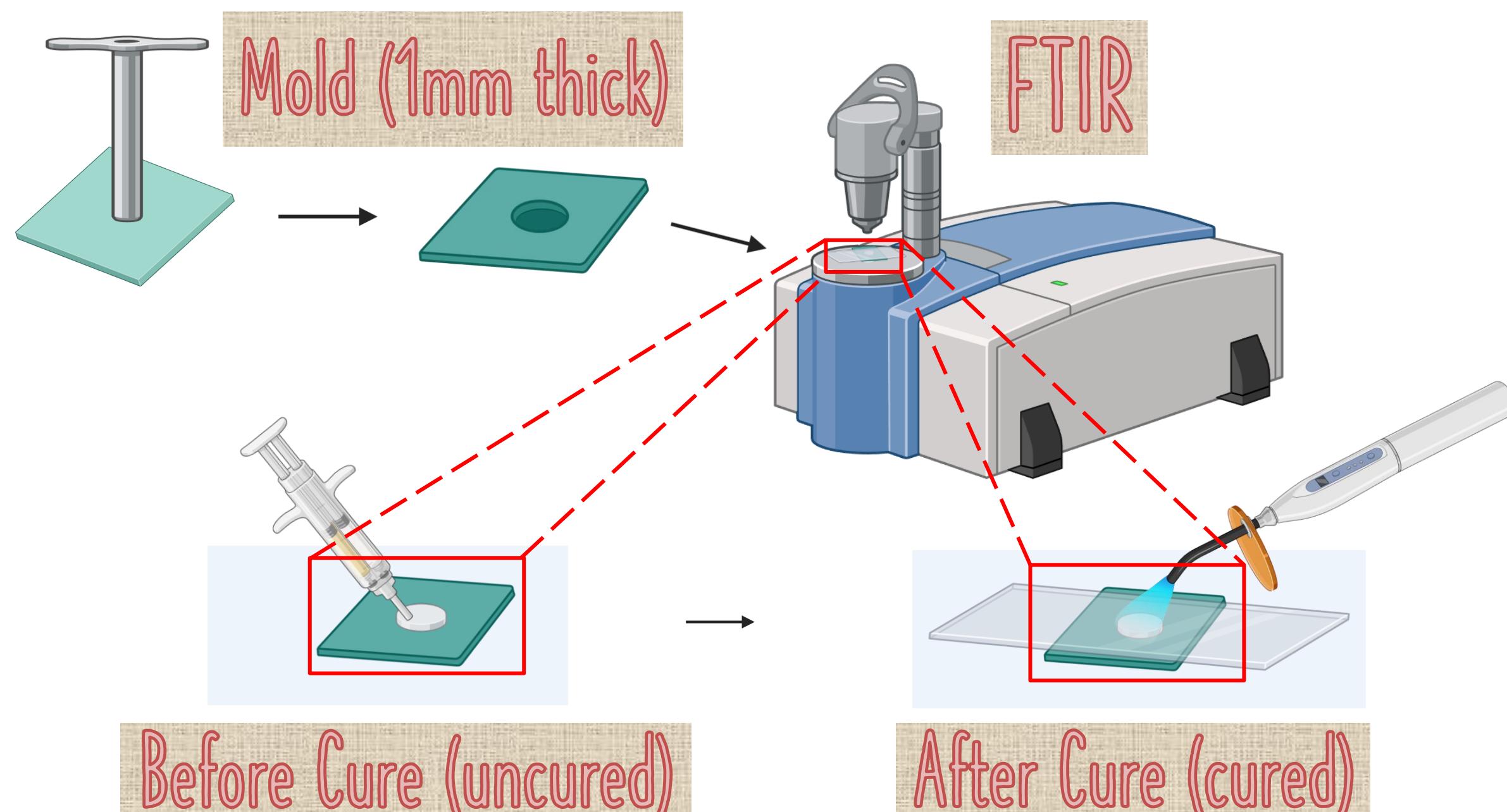
- This study aimed to evaluate and compare the degree of conversion of commercially available amine-free dual-cure resin cements.

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^{-1}) against the internal reference carbon-carbon bonds in the aromatic rings (peak at 1609 cm^{-1}) in the resin matrix.



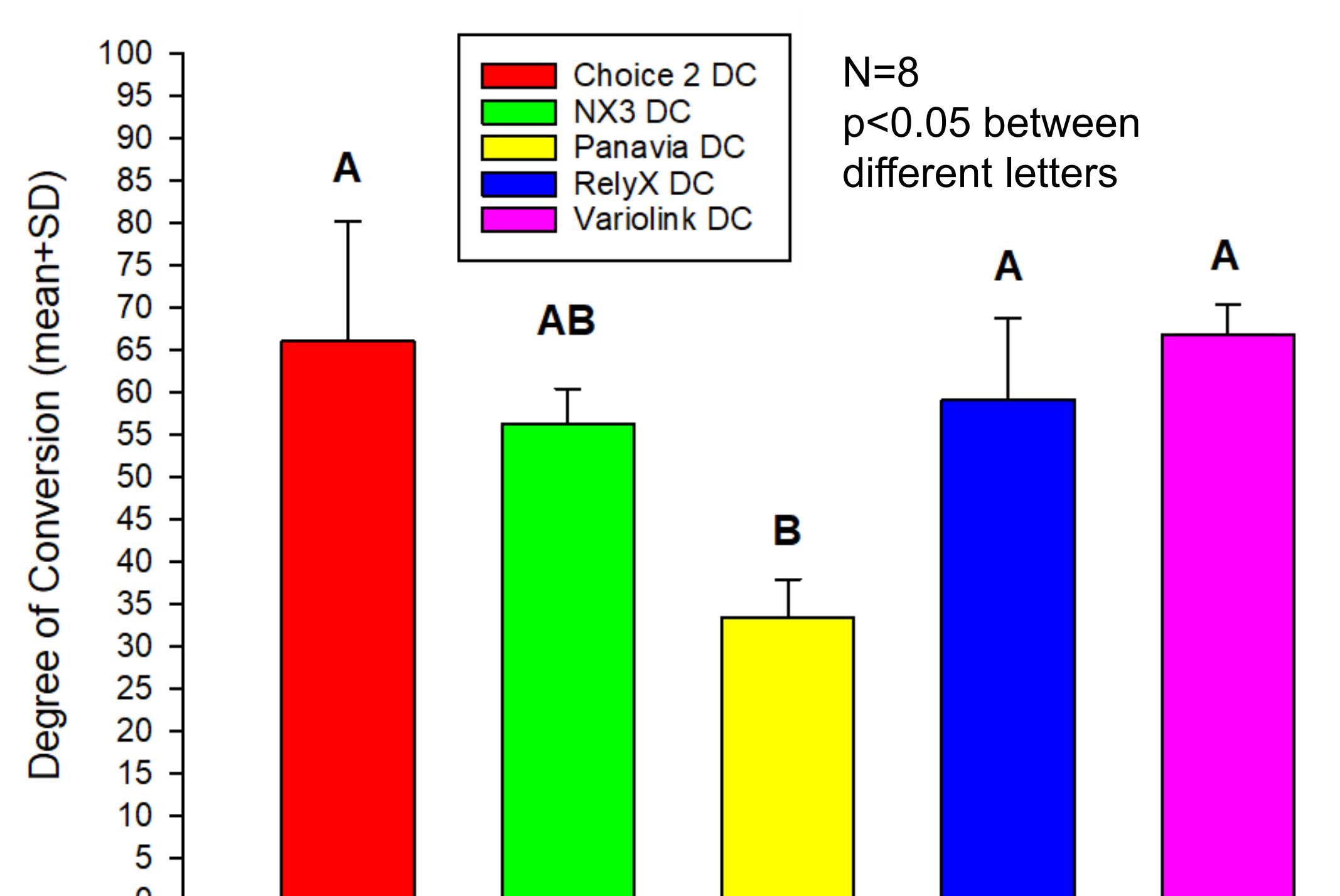
- The degree of conversion (DC) was calculated and expressed as a percentage using formula:

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

- 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

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- The authors declare that there is no conflict of interest.

REFERENCES

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