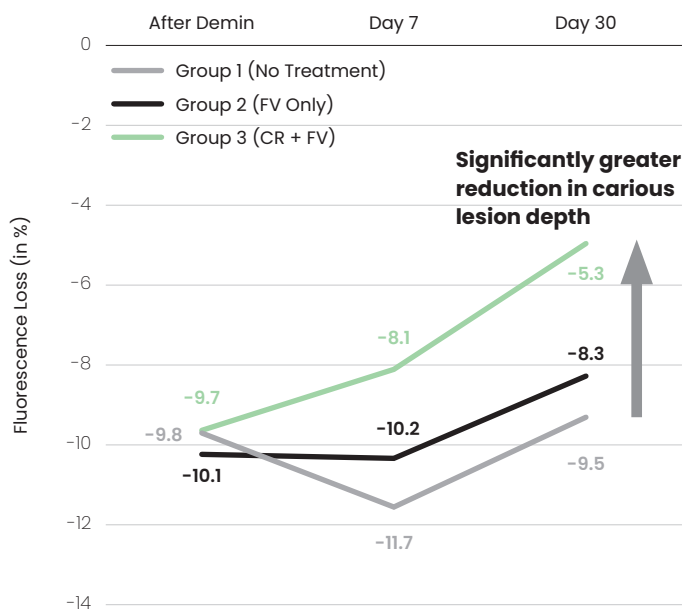




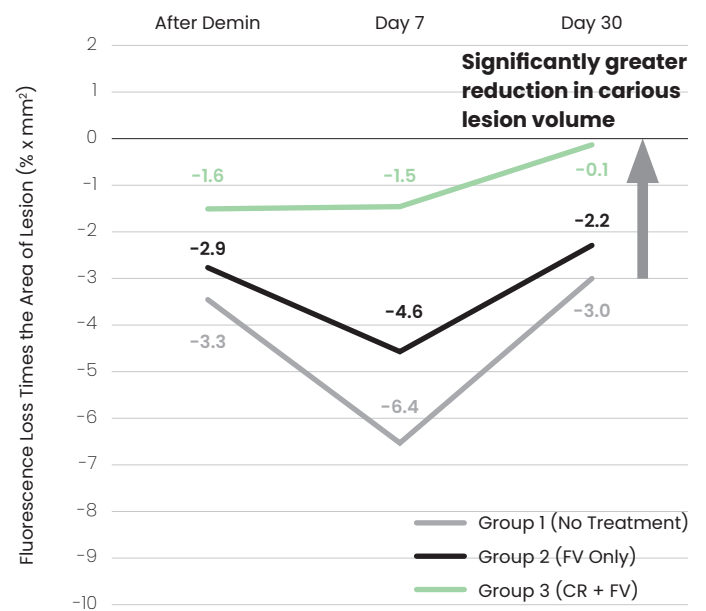
Significantly Superior Remineralization of Early Caries Adjacent to Fixed Orthodontic Brackets with the Combination of Curodont Repair (CR) and Fluoride Varnish (FV) Compared to FV Alone

RESULTS

A single application of CR followed by FV led to higher remineralization in demineralized areas adjacent to orthodontic brackets than did a single application of FV and the administration of no treatment in the short term (30 days). This was demonstrated by a significantly higher reduction in both lesion depth and volume after treatment with CR+FV.

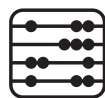


The fluorescence loss with group 3 (CR+FV) was significantly lower than the other groups on both Days 7 and 30 ($P = 0.00001$), indicating significantly greater reduction in lesion depth.



The fluorescence loss times area with group 3 (CR+FV) was significantly lower than the other groups on both Days 7 and 30 ($P < 0.000001$), indicating significantly greater reduction in lesion volume.

STUDY ESSENTIALS



In-vitro Study



30 Days



Philipps-University of Marburg, Germany

How can you use these results in your practice?

Patients undergoing fixed orthodontic therapy are at a high risk of developing caries due to difficulty in maintaining good oral hygiene. These caries, in the form of white spot lesions, can even develop a month into the treatment. With CR, you can treat these lesions as soon as they are detected during orthodontic follow-up appointments every 4-6 weeks. CR can be used even while the brackets are still in place and it does not affect the bond strength of the orthodontic adhesive. This enables you to actively manage early caries in the course of the treatment rather than having to address these esthetically unappealing lesions after debonding of the brackets.

STUDY INFORMATION

Title: Impact of self-assembling peptides in remineralization of artificial early enamel lesions adjacent to orthodontic brackets*



Products/Treatments Tested: Group 1 – No treatment
Group 2 – Fluoride varnish 22,600 ppm (FV) alone
Group 3 – Curodont Repair (CR) + FV

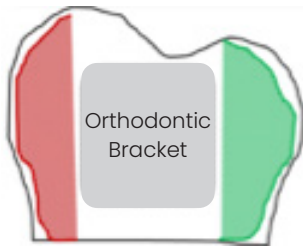


Scope & Methodology: The ability of the combination of CR + FV to remineralize early caries adjacent to orthodontic brackets was compared to that of FV alone and to no treatment. The remineralization was assessed using *Quantitative Light-induced Fluorescence (QLF)*. The fluorescence of enamel reflects its mineral content. The loss of minerals (as in caries) is indicated by a fluorescence loss. Conversely, when the mineral content increases (as in remineralization), the fluorescence loss reduces. The following QLF measurements were made after demineralization and on Day 7 and Day 30 after administration of the treatments:

1. Fluorescence loss (in %): Indicative of carious lesion depth
2. Fluorescence loss times area (% x mm²): Indicative of carious lesion volume



Procedure: Buccal surfaces of extracted teeth were prepared as follows:



Green patterned segment: Intact enamel

Red patterned segment: Demineralized enamel (caries)

Middle segment: Fixed with an orthodontic bracket in the center and then subjected to different remineralization agents after demineralization

The samples were grouped as follows depending on the remineralization agents used:

- Group 1 (Negative control): No treatment
- Group 2 (Positive control): Single application of FV
- Group 3 (Test group): CR + FV (FV applied 5 minutes after CR)

After treatment administration, all samples were stored in a remineralizing solution.



Conclusion: A single application of CR followed by FV remineralizes artificial carious lesions by a significantly greater extent compared to a one-time use of FV in the short term (30 days). This combination can be used in patients undergoing fixed multi-bracket orthodontic therapy.

Reference

*Jablonski-Momeni, A, Nothelfer, R, Morawietz, M. et al. Impact of self-assembling peptides in remineralisation of artificial early enamel lesions adjacent to orthodontic brackets. *Sci Rep* 10, 15132 (2020)

Supporting Studies

- ¹ Alkilzy M, Tarabaih A, Santamaria RM, Splieth CH. Self-assembling Peptide P11-4 and Fluoride for Regenerating Enamel. *J Dent Res.* 2018 Feb;97(2):148-154.
- ² Sedlakova Kondelova P, Mannaa A, Bommer C, Abdelaziz M, Daeniker L, di Bella E, Krejci I. Efficacy of P11-4 for the treatment of initial buccal caries: a randomized clinical trial. *Sci Rep* 2020;10:20211
- ³ Bröseler F, Tietmann C, Bommer C, Drechsel T, Heinzl-Gutenbrunner M, Jepsen S. Randomised clinical trial investigating self-assembling peptide P11-4 in the treatment of early caries. *Clin Oral Investig.* 2020;24:123-132
- ⁴ Doberdoli D, Bommer C, Begzati A, Haliti F, Heinzl-Gutenbrunner M, Juric H. Randomized Clinical Trial investigating Self-Assembling Peptide P11-4 for Treatment of Early Occlusal Caries. *Sci Rep.* 2020;10:4195.