Reviewer’s report

Title: Effect of microsilver and nanosilver particle addition to the primer of an orthodontic adhesive on Enamel Shear Bond Strength (SBS)

Version: 1  Date: 9 September 2014

Reviewer: Peter Proff

Reviewer’s report:

The present study investigated the effect of a nanosilver and microsilver complement to a commonly used adhesive on the shear bond strength of brackets bonded to bovine teeth with this modified adhesive in an in-vitro-experiment. This subject is of considerable clinical importance, since silver particles have been shown to have an antibacterial effect, which could in turn effectively reduce the appearance of white spot lesions around bonded brackets, when released from the adhesive material. The authors showed that the added nano- and microsilver particles did not significantly affect shear bond strength that was within clinically acceptable parameters for all concentrations tested. In addition, the authors could show that no clinically visible discoloration remained from the silver particle after debonding, whereas microscopically silver particles and discoloration could be detected.

Although this study did not address whether this modified adhesive does actually reduce the formation of white spot lesions or is of acceptable biocompatibility in a clinical setting, the results of this study are an important first step into developing an improved adhesive. The authors showed that shear bond strength and discoloration were acceptable for clinical use. Further research will have to be conducted in a clinical setting to assess its potential.

The methods used in the study are sound and in accordance with commonly used protocols for the assessment of shear bond strength in in-vitro-settings. The results are well presented and the figures are informative and the tables concise. The authors sufficiently discuss and incorporate the available literature.

The conclusions drawn by the authors are supported by the results and the need for further clinical investigation is addressed appropriately.

Despite the overall high quality of the paper, some minor issues still have to be addressed:

- Major Compulsory Revisions
  NONE

- Minor Essential Revisions
1. The embedded text “Figure 2” should be removed from Figure 2.
2. Vertical lines from the tables should be removed and values centered within the table cells.
3. Some typographical errors have to be addressed:
   - Line 120: Newton instead of Newtons
   - Line 178: ammonium

- Discretionary Revisions

Figure 1 seems to be a bit blurry and the overlapping Kaplan-Meier-curves are difficult to distinguish. The graph would benefit from being stretched out horizontally to separate the curved to a higher degree and improve readability. In addition the legend could be incorporated into the graph window.

Due to the innovative and clinically highly relevant nature of the study, I recommend it for publication and look forward to further clinical studies on the subject.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.