Reviewer’s report

Title: Enamel surface alterations after repeated conditioning with HCl

Version: 1 Date: 9 August 2015

Reviewer: Yannicke DAUPHIN

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The manuscript is dedicated to the effect of HCl on the erosion of the enamel layer in human molars.

The aim of the experiments is well explained, but the experimental protocol is not clearly described.

Methods:

It has been shown that the P and Ca contents depend on the age of the individuals (He et al. 2011). Several older papers show similar results. No data is provided about this parameter. Moreover, it is also known since decades that the prisms in the outer layer of enamel are more or less well defined.

To detect these possible variations in the studied teeth, SEM observations on untreated samples are needed. Using a BSE detector, no gold or carbon coating is necessary, so that the etching procedure is possible after a first set of images is obtained.

How long the teeth were preserved in a saline solution? The presence of water causes a more or less important dissolution even for the resistant tissues such as enamel. Have these teeth been cleaned before to be stored in the saline solution? Have these teeth been cleaned after the saline solution storage and before to be covered by the varnish? All these data of the sample preparation are missing.

Was the acidic etching done using a magnetic stirrer or another system to agitate the solution?

It must be noted that to remove the acid solution with water for 30 seconds is very short (not sufficient?)

Results:

The fact that the depth of the etched surface increased with the etching duration is a common well known feature by all the people working with polished teeth.

The statistics are adapted to the number of samples, but suffer from the lack of comparison with unetched teeth, because prisms are more or less visible before the etching.

The SEM images are of good quality and relevant.

Discussion:

The first paragraph (p.6 -7) of this section is a repetition of what has been
already said in the Introduction. Idem for p. 7 line 154. Moreover, no conclusions are linked to this sentence.

The remark about the pattern and the morphology of the prism is not fully adequate. Probably the presence of well or poorly built prisms, and their orientation play a role, not their shape. A preliminary SEM analyses before the acidic etching could give an answer.

Details missing in the experimental section prevent the experiment to be done by another team. Interpretations are limited because of the lack of unetched teeth as references.

May be the authors can use the unetched part of the teeth to do such comparison to improve their knowledge of the acidic etching,

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

no conflict