

Letter to the Editor

<<Mechanical effects of different Swiss market-leading dentifrices on dentin>>

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Dear Dr. Tawakoli

Since some of our oral care products have been included in your recent study we would like to comment on some results and your conclusions.

Fluoride content

Your results show a discrepancy between declared and measured fluoride content. Based on these findings you see the *“necessity of conducting regular verifications of marketed products and submitting requests for revision of the declarations to maintain the proposed standards”*.

As a leading manufacturer of oral care products we need to highlight that all our oral care products comply with all regulations. All our tests do not indicate any discrepancy with declaration. Differences to declaration might be caused by the measurement method which was not taken into consideration in your discussion. Since all aminefluoride-containing products tested lower than declared we believe the method wasn't appropriate to measure the full fluoride content. Of course we will share our methods with you for future research.

Comparison of toothpaste abrasivity to publication of Imfeld, 1998

Your results show that *“RDA values measured in the 1998 study were lower for all seven dentifrices that were also tested in the present study”*.

In your discussion you only focus on your measurement without taking into consideration that the abrasivity shift could be potentially caused by differences in the assessment method.

“A comparison between the dentifrices examined in 1998 and those of the present study highlights a shift towards higher abrasion . . . for the dentifrices in the present study.”

It's known that in 2007 the method used in your labs changed in terms of the standard abrasive (IMFELD, J Clin Dent, 2010, S11–S12). Furthermore the toothbrushes used in both tests vary (IMFELD, Acta Med Dent Helv, 3, 54–59 [1998]). Differences in abrasivity between both tests rather originate from differences in the method than from real differences of products. We haven't changed the formula of elmex Kariesschutz toothpaste since 1998, nevertheless your results indicate an increase of 71%.

Ranking

The ranking is based on a proposal published by Imfeld 1998, which was chosen arbitrarily. Later Imfeld proposed a different ranking (Prophylaxedialog, special edition RDA, 2011). Both proposals never got scientific acceptance. We are not aware of any international accepted standard to classify toothpastes based on RDA values. The International Standardization Organization (ISO) disclaims a graduation of toothpastes due to the RDA values beyond the accepted safety margin of RDA 250 (DÖRFER, Oralprophylaxe/Kinderzahnheilkunde 33 [2011], 18–22).

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Response to the Letter to the Editor

Dear Authors,

Thank you for your letter and your comments. We would like to clarify the described uncertainties and our conclusions point by point in this response letter.

Fluoride content

Please take into consideration that independent tests (as performed by the University for the study) should be considered as additional controls in addition to all regulation controls of the manufacturers themselves.

In the case of fluoride measurements, repeat determinations were performed for the total fluoride content as well as for the ionized fluoride content. The methodology was already kindly provided by leading manufacturers of aminefluoride-containing products. Due to the described discrepancy of the fluoride content and your comments, we recently repeated the determination of the fluoride content in the used dentifrices of the study. Additionally, new toothpastes were purchased and tested. The results of our study were proven to be reproducible.

Comparison of toothpaste abrasivity to the publication of Imfeld, 1998

The methodology of the study performed in 1998 and the current study are the same. Both are validated within the ISO 11609-norm. A new standard abrasive and new toothbrushes had to be used, since over time both were not available on the market anymore. Various tests were therefore performed to adjust the new abrasive and toothbrushes and the outcome was successfully validated. The RDA measurements are still within the ISO 11609-norm and internal controls using a reference toothpaste are performed within each testing. Unpublished data of 2006 and 2011 reveal RDA values of 48 and 59 for Elmex Kariesschutz. The RDA of 38 in 1998 and of 65 in our present study indicate a gradual shift towards higher abrasion potential.

Ranking

The ranking was not only based on RDA values. As recommended in your reference to the article from Imfeld (Prophylaxedi-olog, special edition RDA, 2011), and by the British Standard Institute, profilometric measurements were performed (surface roughness) besides the RDA measurements. Both results were shown to significantly correlate in the study. The ranking proposed by Imfeld in 2011 and in 1998 are both in agreement with each other. The ranking was chosen, due to the lack of internationally accepted standards to classify toothpastes and to the increasing broad selection on the market. Consumers as well as dentists gain insight about the relative properties of different dentifrices. In the framework of this study, dentists can build their own recommendations based on the measured results on cleaning efficacy, relative dentin abrasion and surface roughness. The ranking is a summary based on all three measured property results. The recommendations in the study are accentuations of the results and are supposed to ease the comprehension.

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