



Letter to the Editor



Dear Editor,

I am writing for comment on the article Tracking of the degradation process of chlorhexidine digluconate and ethylenediaminetetraacetic acid in the presence of hyper-pure chlorine dioxide in endodontic disinfection which appeared in the 5 February 2019; 164:360–364 issue of your journal by Herczegh, et al. [1]. First of all, I thank the authors for this successful work and for highlighting the uncertainty about the 13.8% ClO₂ (BioClenz) concentration. I see that chlorine dioxide (ClO₂) is still the subject of current researches nowadays. I would like to draw attention to an important detail about the 13.8% ClO₂ (BioClenz; Frontier Pharmaceutical, Melville, NY) concentration used in the endodontic researches and thus to contribute to both the mentioned article and the literature by eliminating the misinterpretations on this subject.

In the literature, the ideal concentration of ClO₂ to be used as an irrigation solution has not yet been determined. In different studies related to ClO₂, different units of measurement, such as % concentration or part per million (ppm) are mentioned [1–5]. ClO₂ concentration of 13.8% seems to be equivalent to 138000 ppm of ClO₂, and under normal circumstances, this concentration is quite high and toxic for clinical use for ClO₂. Therefore, it is clear that there is a misunderstanding here and consequently it is a very important requirement to provide more detailed information about the 13.8% ClO₂ (BioClenz), which has been used in many endodontic studies in the literature.

In clinical practice and studies, % concentration (w/w value) values are often used for such solutions. However, the concentration value of 13.8% used for ClO₂ in the endodontic literature actually refers to the concentration of sodium chlorite (NaClO₂) (precursor), not the percentage of ClO₂ in the solution [2]. Already, the use of high real ClO₂ concentrations above 3000 ppm has a toxic effect [1,3]. And also, such a high real concentration of ClO₂ (about 138000 ppm) is not applicable as it is toxic, dangerous and explosive [2]. In an iodometric titration study evaluating the concentration of active chlorine (Cl₂), 13.8% ClO₂ was shown to contain 12.69% (mass/volume) of active chlorine [4]. Therefore, the inaccuracy here

is due to the fact that the 13.8% ClO₂ (BioClenz) concentrations applied in the studies actually refer to sodium chlorite (precursor) concentrations, not ClO₂ [2]. The manufacturers of BioClenz have stated that BioClenz was formerly called DioxiClear and its ClO₂ ratio was 140 ppm [5]. As a result, the active chlorine concentration in the solution, specified as 13.8% ClO₂, is 0.014%, below the toxic level and within safe limits for clinical use. In future studies, I think that using the expression “140 ppm of ClO₂” instead of “13.8% solution of ClO₂” will prevent misunderstanding on this issue.

Declaration of Competing Interest

The authors report no declarations of interest.

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Hilal Erdogan
Nevsehir Haci Bektas Veli University, Faculty of
Dentistry, Department of Endodontics, 2000 Evler
Mah. Zubeyde Hanim Cad. 50300, Nevsehir, Turkey
E-mail address: hilal Erdogan@nevsehir.edu.tr

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