Reviewer’s report

Title: Influence of electromagnetic radiation emitted by daily-use electronic devices on the Eyemate® system in-vitro: a feasibility study

Version: 0 Date: 01 May 2020

Reviewer: Chungkwon Yoo

Reviewer's report:

This study investigated the effect of electromagnetic radiation produced by everyday electronic devices (cell phone, cordless phone and laptop) on the measurements made by an eyemate®-IO sensor in an artificial, controlled environment. The authors demonstrated that measurements made during active and inactive states of the tested devices showed the same steady state behavior. Based on their observations, they concluded that the patients can be informed that the electromagnetic radiation emitted by their daily-use electronic devices does not interfere with IOP measurements made by the eyemate®-IO sensor.

Overall, this is a clinically interesting well performed study which may provide relevant information to the clinicians and the patients. This reviewer has some questions and comments as follows.

1. Which version of eyemate®-IO sensor used in this study, first-generation or second generation? Compared to the recent paper where the second generation eyemate-IO sensor was used, the previous studies demonstrated more cases of malfunctioning which required recalibration. From the Figure 1, it is unclear whether the latest generation means the second generation or not.

2. How many samples of devices were tested in this study? Demonstration of the same steady state behaviour of the measurements needs to be reproducible.

3. In a recent paper on IO-sensor (ARGOS-2 trial; Am J Ophthalmol. 2020 Jan;209:187-196), they found two cases of device malfunctioning: one, post YAG laser capsulotomy and the other following UBM examination. The authors went too far to conclude that the patients can be informed that the electromagnetic radiation emitted by their daily-use electronic devices does not interfere with IOP measurements made by the eyemate®-IO sensor. More research seems to be needed to support such conclusion. Please rephrase the conclusion statement accordingly within the scope which the present study outcomes cover.

4. In a previous similar study on Triggerfish contact lens sensor (BMC Ophthalmol. 2018;18(1):1-5.), they reported the effect of temperature variations on the Triggerfish measurements. You may provide discussion on the potential impact of the temperature variations on IO-sensor.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

Acceptable

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