Author Response: Comments on Enrichment of Macular Pigment Enhances Contrast Sensitivity in Subjects Free of Retinal Disease: CREST - Report 1

We note the letter from Professors Richard Bone and John Landrum in response to our recently published clinical trial entitled “Enrichment of Macular Pigment Enhances Contrast Sensitivity in Subjects Free of Retinal Disease: Central Retinal Enrichment Supplementation Trials - Report 1”.2 We thank our colleagues for their positive comments on our study. We acknowledge also their concerns about our Figure 1, which was prepared and included in our manuscript to help with the description of what we know about the distribution of lutein, zeaxanthin, and meso-zeaxanthin at the macula, and, more importantly, what we have learned from interventional trials using the macular carotenoids.3 In other words, we believe our figure reflects the totality of available evidence. For example, we know that, in subjects with central dips (i.e., at 0.25° eccentricity) in their macular pigment, supplementation with a formulation containing meso-zeaxanthin (and not lutein) is required to rebuild their central macular pigment,3 and this observation is important because it indicates that meso-zeaxanthin is the candidate composite of central macular pigment.

It is important to point out that Figure 1 in our manuscript does not claim to quantify the carotenoids at the macula, but rather showcase what we have learned regarding the relative distribution of the macular carotenoids. Also, and in reply to the main concern raised by Bone and Landrum in their letter, we do not feel that our figure presents “L as an annular ring around the fovea.” Review of Figure 1 and the accompanying legend suggests that lutein is also present in the central macula but is distributed further into the periphery, where meso-zeaxanthin is not. The high concentration of meso-zeaxanthin presented centrally in our figure, and only centrally, may influence the interpretation of this figure, so it is important that it is clarified here, as per the explanation above. However, we do not doubt that there is room for improvement in our illustrative attempt, and we will take on board Bone and Landrum’s comments in any further refinements of the Figure in question.

Of course, the pioneering work by Bone and Landrum must also be acknowledged, as it informed all those working on the macular carotenoids at the very center, and therefore we can only draw conclusions from the carotenoid interventional trials in tandem with the information we can take from the HPLC studies by Bone and Landrum. It would be very useful if Bone and Landrum were able to report their data in millimeters from the degree data they reported in their papers.

In summary, we welcome this correspondence from Bone and Landrum, and are pleased that this important scientific discussion continues. Additional studies will help further our understanding of the distribution of the carotenoids at the macula and this needs to be performed for different populations.

References


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