Reviewer’s report

**Title:** The ChromaTest, a Digital Color Contrast Sensitivity Analyzer, for Diabetic Maculopathy

**Version:** 1  **Date:** 28 September 2007

**Reviewer:** Tony Casswell

**Reviewer’s report:**

This is an interesting paper indicating that testing tritan in diabetics could be a useful screening tool.

- Major Compulsory Revisions

(1) pg3: Methods: No mention of how control data was obtained.

(2) pg5, par 2: Selection of eyes for analyses. Please clarify how this was done e.g. was the authors using one eye per subject or both eyes for the analyses? The final 115 eyes with NPDR and 35 with CSME comprised of how many subjects? If the dataset consist of patients who contributed both eyes and patients who contributed only one eye, then it might affect the statistically analysis. I feel that only one eye from each patient should be used in analysis unless the authors can demonstrate that the TCCT and PCCT of Right Eye and Left Eye of each patient are independent of each other, ie there is no correlation between them.

(3) Pg 5, par 3: Any statistical significant difference between the diabetic groups (NPDR & CSME) and age-matched controls?

(4) Pg5, par 3: Suggest a bar/column chart showing the TCCT, PCCT of NPDR, CSME as well as respective age-matched controls groups.

(5) Studies have demonstrated that diabetes duration correlates strongly with increases in lens optical density, even among patients with relatively short diabetes duration. Consequently, any tritan deficit seen in diabetics may be wholly or partly due to the pre-retinal absorption of short-wavelength light resulting from lens yellowing. Did the authors take into consideration lens-yellowing effect suffered by diabetics in the analyses?

(6) Pg 6, par 1,2: What is the 95% confidence interval for the sensitivity and specificity stated? Is the 72% sensitivity and 74% specificity stated statistically significant?

(7) Pg 7 par 2 & par 3: TCCT above/below normal levels: Are these age-matched normal levels? Are these differences statistically significant? What does “above normal levels” implies? It is not immediately apparent whether it implies the TCCT is worse or better than the normal level. A small sentence should be added for those individuals who never had any experience of TCCT measurement to make it easier to understand such as: The higher the TCCT score the more abnormal the result.
(8) The authors aim to assess the ability of the Chromatest as a screening tool for CSME. In practice, it would actually be better if the authors assess the ability of the Chromatest to screen for sight-threatening diabetic retinopathy (PDR and CSME) rather than just CSME.

(9) it is not clear why “those patients with CSME classified due to exudate and retinal thickening within 1 disc diameter of the fovea are excluded” to improve sensitivity. Do the authors mean exudates with no central macular thickening?

(10) Further comment on conditioning and speed of the test would be helpful. If conditioning is a problem corrected by a longer test time, can the test be regarded as a quick 5 minute process?

- Minor Essential Revisions

The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

- Discretionary Revisions

These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

Please note that both the comments entered here and answers to the questions below constitute the report, bearing your name, that will be forwarded to the authors and published on the site if the article is accepted.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable