Reviewer's report

Title: Investigation of the anti-cataractogenic mechanisms of curcumin through in vivo and in vitro studies

Version: 0 Date: 09 May 2017

Reviewer: Moonsun Jung

Reviewer's report:

Dear Authors

It was an interesting experimental research.

Curcumin is a well-known substance for anti-oxidant. Also, it contributes to anti-cancer effect, neuroprotection, and calcium regulation.

The research was intended to verify the mechanism of curcumin that prevents cataract caused by oxidative stress. Selenite reduces numerous anti-oxidation substances such as CAT, SOD, MDA, GSH-Px and increases MDA and apoptosis which eventually generate cataract. Authors have shown the curcumin's influence on neutralizing the effect of selenite. Also, in vivo and in vitro experiments demonstrated that curcumin has anti-oxidative effect and suppresses apoptosis, which conduces toward reducing the development of cataract. However, it is difficult to judge the mechanism of curcumin only through these experiments.

Moreover, these contents were previously proved by other research papers. The paper is similar to 11th reference and the research 'Effect of curcumin on selenite-induced cataractogenesis in Wistar rat pups' done by Manikandan R (Curr Eye Res. 2010 Feb;35:122). Also, other paper (Cell Physiol Biochem. 2017;41:661) had previously reported the curcumin's effect on decreasing apoptosis was related with mitochondrial dysfunction in detail. In other report, curcumin has the effect of cellular protection by regulating intracellular calcium release through transmitter. I thought that these reports described the effect of curcumin more specifically. So I believe that this report failed to differentiate its content with other previous researches. Authors' notification about the mechanism of curcumin represses apoptosis through the change of mRNA expression such as caspase 3, Bax, Cox-2, Bcl-2 etc. is alike to the result of precedent studies. The paper also needs additional explanations about e-met and slug which had no significance in conclusion.

In order to issue the paper, it must need its own creative experiment or the significant explanations about the meanings of these reports.
Page 6. In the paragraph about Real time PCR, 'table 1' is mislabeled as 'table 2'.

Page 8. As shown in Figure 3B-D, H2O2 caused an increase in the number of cell death in HLEBs cells after treatment for 24 hours. (11.7\% vs. 27.2\%) The percentage value of 11.7\% should be changed to 12.8\% to match the percentage value provided in Figure 3.

Referring to the advices above, please revise the paper.

Thank you.

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.

No

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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