Reviewer's report

**Title:** EGCG suppresses MPP+-induced the damage of Oxidative stress in PC12 cell through SIRT1/PGC-1alpha signaling pathway

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**Reviewer:** Hirokazu Hara

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Comments to authors:

The manuscript by Ye et al. describes that epigallocatechin-3-gallate (EGCG) protects against MPP+-induced cell death and that co-treatment with EGCG and MPP+ induces protein expression of SIRT1 and PGC-1 and mRNA expression of antioxidant genes. Based on these results, the authors propose that EGCG protection is mediated via the SIRT1/PGC-1 signaling pathway. Although this study is interesting, the reviewer has some comments. Please examine the following points.

1# Figs. 2 and 3: The authors provide no information about the time of treatment of cells with EGCG and/or MPP+. The reviewer thinks the treatment period is an important factor to understand the relationship between SIRT1/PGC-1 pathway and expression of antioxidant genes. Therefore, time course studies should be performed.

2# EGCG had protective effect against MPP+-induced cell death. However, treatment with EGCG alone failed to induce protein expression of SIRT1 and PGC-1, whereas co-treatment with EGCG and MPP+ induced SIRT1 and PGC-1 expression. The reason why MPP+ enhances expression of these proteins should be discussed.

3# Fig. 3 shows that ECGC induces antioxidant genes such as SOD1 and GPX1. Therefore, the authors mention in the text that reactive oxygen radicals scavenging effects of EGCG contribute to EGCG protection against MPP+ toxicity. If so, did the authors check whether treatment with EGCG decrease levels of intracellular oxygen radicals after MPP+ exposure?

4# The authors argue that expression of the antioxidant genes is mediated via the SIRT1/PGC-1 pathway in EGCG treated PC12 cells. However, it is not clear whether EGCG-induced activation of the SIRT1/PGC-1 pathway leads to induction of the antioxidant genes. Therefore, this conclusion is suggestive but not definitive. Does resveratrol, an activator of SIRT1, or sirtinol, an inhibitor of SIRT1, influence EGCG protection or expression antioxidant genes?

5# There are many typographical and grammatical errors. The manuscript should be checked carefully before submitting.

**Level of interest:** An article of limited interest
Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.