Reviewer's report

Title: Diosgenin ameliorates palmitic acid-induced lipid accumulation via AMPK/ACC/CPT-1A and SREBP-1c/FAS signaling pathways in LO2 cells

Version: 0 Date: 01 Aug 2019

Reviewer: Nazmul Haque

Reviewer's report:

"Diosgenin ameliorates palmitic acid-induced lipid accumulation via AMPK/ACC/CPT-1A and SREBP-1c/FAS signaling pathways in LO2 cells" is an interesting manuscript written on a well-designed research. However, there are few major issues needed to be resolved:

Major comments:

1. Introduction does not reflect the importance of AMPK/ACC/CPT-1A and SREBP-1c/FAS signaling pathways in regulating lipid accumulation. Hence, the objectives of this study are obscured. Please revise the introduction accordingly.

2. Please revise the following sentence written under 'Cell culture, viability assay and treatment' sub-heading and mention the seeding density. Because, seeding density is very important to reproduce your work.

"LO2 cells were cultured in 6 well-culture plates and allowed to grow overnight to 70% confluence."

3. Please write down the name of the animals used to raise the primary and secondary antibodies. Specify the fluorescent conjugates used to label the secondary antibody.

4. Please change the 'Immunofluorescence Analysis' sub-heading to 'Detection of reactive oxygen species and mitochondrial membrane potential', as it is a simple fluorescent technique rather than an immunofluorescence.

5. In this study the cells were divided into the following groups
A) control group (incubated in DMEM containing 10% FBS)

B) model group (PA at a selective concentration for 24 h)

C) DSG groups (PA + different concentrations of DSG for 24 h)

D) AMPK activator group (PA + A-769662 for 24 h)

E) AMPK inhibitor group (PA + DSG + Compound C for 24 h).

Data were analyzed using one-way ANOVA and post-hoc. However, presentation of the results is not comprehensive. In some results, it is obvious that one group has significant differences with multiple groups, while the presentation of the results is not reflecting that. Please revise the figures to make them more comprehensive and communicative. Moreover, in the text, instead of writing 'significantly different' or 'distinct increase/decrease' only add the original 'p values' in brackets as well.

6. In discussion, DSG received little attention. Based on the results, further explanation is needed on the effect of DSG in regulating AMPK/ACC/CPT-1A pathway. Discussion requires major revision.

7. Please revise the conclusion to align with the objectives.

Minor comment:

1. Please avoid abbreviation for the terms that are being used first time in the text.

**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 recommend additional statistical review

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