Reviewer’s report

Title: Anti-inflammatory and cytotoxic evaluation of extracts from the flowering stage of Celosia argentea

Version: 1 Date: 13 Nov 2019

Reviewer: Research Square Reviewer 1

Reviewer's report:

PEER REVIEWER ASSESSMENTS:

OBJECTIVE - Full research articles: is there a clear objective that addresses a testable research question(s) (brief or other article types: is there a clear objective)?
Yes - there is a clear objective

DESIGN - Is the current approach (including controls and analysis protocols) appropriate for the objective?
No - there are major issues

EXECUTION - Are the experiments and analyses performed with technical rigor to allow confidence in the results?
No - there are major issues

STATISTICS - Is the use of statistics in the manuscript appropriate?
Yes - appropriate statistical analyses have been used in the study

INTERPRETATION - Is the current interpretation/discussion of the results reasonable and not overstated?
No - there are major issues

OVERALL MANUSCRIPT POTENTIAL - Is the current version of this work technically sound? If not, can revisions be made to make the work technically sound?
Maybe - with major revisions

PEER REVIEWER COMMENTS:

GENERAL COMMENTS:

* What is your overall impression of the study? The study is designed to test the possible anti-inflammatory properties of multiple extracts of C. argentea. The authors also examine potential cytotoxicity of these extracts. This study was done using cell culture methods, which is completely appropriate at this stage.
* What have the authors done well? I appreciate that the authors are looking at both therapeutic
effects (anti-inflammatory effects) as well as potential toxic effects (cell viability). It's important
to appreciate both at an early stage.

* In what ways does it not meet best practice? The experiments in the paper contain significant
variability and do not include appropriate controls. Furthermore, the authors overstate their
results in a few areas.

REQUESTED REVISIONS:

Experimental design- The experiments lack important controls. For example, the authors used 3
extraction methods (acetone, water, and methanol), which show differential effects. However,
because the authors did not show (or test?) vehicle alone (extraction buffer). It is unclear whether
differences are due to the extraction buffer, or the compounds within in the extraction buffer.
The authors also included some controls (silymarin and melphalan), but did not discuss why
there were used, and did not include a vehicle only control for these compounds. Again, it is
unclear whether the changes are due to the compound of the diluent.

The authors chose to measure NO as a measure of inflammation. There are many markers or
inflammation, and there is no discussion on why NO was specifically chosen. I also don't
understand why the authors chose murine preadipocytes for the cell viability assays.

Execution- The data are presented with error bars, so I presume the authors ran the experiments
in duplicate or triplicate, but I cannot assess. Oddly, the results are presented as "1st and 2nd
trial". The results of the two trials are somewhat inconsistent. This is not surprising given the
nature of the experiments, however, more replicates should be done in order to make more
concrete conclusions.

Statistics- The statistics as described seem appropriate. The figures are not labeled well, they are
very busy and hard to read.

Interpretation- I am not convinced of the increase in cellular proliferation that you report. More
studies should be done to explore this phenomenon. The fact that you used these data to say that
the extracts can be used for wounds, etc is a stretch. The authors also conclude that "all extracts"
are "not toxic" and that "C. argentea could be safely used as an anti-inflammatory with no-side
effects". The data do not support these conclusions.

ADDITIONAL REQUESTS/SUGGESTIONS:
I would strongly consider 1) assessing multiple inflammatory markers and 2) conducting
additional toxicity assays in multiple cells lines. The authors also need to reasonably state
conclusions from the data.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No
Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

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

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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Please complete a declaration of competing interests, considering the following questions:

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