Reviewer's report

Title: Do plants mediate their anti-diabetic effects through anti-oxidant and anti-apoptotic actions? An in vitro assay of 3 Indian Medicinal Plants

Version: 1 Date: 19 April 2013

Reviewer: Dongbo Liu

Reviewer's report:

1. Is the question posed by the authors well defined?
Yes, the questions are well defined.
2. Are the methods appropriate and well described?
Most of the methods are appropriate and well described except the choice of the positive control. Glibenclamide is an anti-diabetic agent, but it does not play the positive role in MDA release and anti-apoptotic property. It would be better if some other anti-hyperglycemic agents were chosen due to their anti-oxidant and anti-apoptotic activities.
3. Are the data sound?
The data seems to be sound.
4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Overall, yes.
5. Are the discussion and conclusions well balanced and adequately supported by the data?
The data and discussion should be described in a more logical way and the conclusions could be improved.
6. Are limitations of the work clearly stated?
More detailed discussion regarding limitations of the work and perspective research should be involved in the manuscript.
7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
Yes.
8. Do the title and abstract accurately convey what has been found?
The abstract is fine, but a more precise title including the study design was suggested.
9. Is the writing acceptable?
Yes.

Major Compulsory Revisions
1. Three to ten keywords representing the main content of the article should be provided.

2. The abbreviation should be defined at the first use, and later could be used directly in the text, for example, “streptozotocin”, “propidium iodide” and “malondialdehyde”, et al.

3. Methods:
The model of some instruments used should be pointed out, for example, ELISA plate reader in the “cell viability assay” sub-section and dual beam spectrophotometer in the “Measurement of Lipid Peroxidation” sub-section. So did the manufacturer of Rat Insulin Elisa kit in the “Measurement of Insulin Secretion” sub-section.

4. Results & Discussion:
It will be more explicit and clear if there are some sub-section titles in this section.

Paragraph 4: It was mentioned that Phyllanthus emblica and Curcuma longa per se showed a dose dependent increase and decrease in MDA levels, as compared to the control RIN cells. Is the difference statistically significant? Because the CI and standard drug were dissolved in DMSO, did DMSO itself show any influence on RINm5F cell line? It was mentioned that MDA levels decreased pointed to its anti-oxidant activity. How to explain the conflicting results that MDA content increased in Phyllanthus emblica per se?

Paragraph 5: Phyllanthus emblica decreased MDA release at lower concentrations against the stress induced by STZ which was contrary to the effect exhibited by Phyllanthus emblica per se. The explanation is that it reflects the rasayana property of Phyllanthus emblica. Could you describe it in detail?

Paragraph 7: In the last sentence, the data in the brackets (23.37±4.51, 9.58±2.48) could not found in Table 1.1. There is no Fig 2.1 in your figures; please mark it clearly (Figure parts should be denoted by lowercase letters, like a, b, c, d etc.).

Paragraph 10: The data of treatment “Cells+Tc100 µg/ml+ STZ” (14.05±1.80) in the text is not consist with that in the table 1.3 (14.5±1.80).

Paragraph 11: How do the data in the bracket (54.28±6.65, 39.13±6.69) come from? Besides, it sounds farfetched that the explanation of “different experimental conditions” for the results of the Glibenclamide obtained in this study contrary to previous studies.

5. Tables & Figures
In the figure 1, each part should be denoted by lowercase letters (a, b, c, etc.).
In the table 1.3, the data of treatment “Cells+Tc 25 µg/ml+ STZ” (16.77±3.65) is significantly different from control “Cells + STZ” (24.69±2.19) with signs of “$$”. Are there any significant differences between the treatments “Cells + Tc 50 µg/ml + STZ” (14.16±1.69), “Cells + Tc 100 µg/ml+ STZ” (14.5±1.80) and the control
“Cells + STZ” (24.69±2.19)?

In the ninth paragraph, it was pointed out that high concentrations of 25 and 50 mg/ml of Curcuma longa alone per se showed effect in the sub G0 (apoptotic) population as compared to the control RIN cells. However, in the table 1.2, there are no signs (* or $) indicating significant difference. Moreover, the data of the sub G0 cell population with STZ alone in the text (23.37±4.51) is not consist with that in the table 1.2 (23.37±4.03).

In the ninth paragraph, why compared the data of treatment of “cells + Cl 10 µg/ml” (10.94±3.78) with “cells+STZ” (23.37±4.51)? Should the data of 10.94±3.78 be a negligence of the data of treatment “cells+Cl 10 µg/ml+STZ” (12.74±3.07)?

Was the treatment “Cells + STZ” and “Cells + STZ + Gb (1 µg/ml)” significantly different from the respective control? There is no sign indicating significant difference in table 1.4.

Minor Essential Revisions

1. Background

Paragraph 1: the sixth and seventh sentence: I would suggest these two sentences become one “The pancreatic β-cells are susceptible to oxidative stress leading to cell apoptosis and consequent insulin secretion reduction”.

Paragraph 3,4: The statement of the experiment could be more concise, putting the emphasis on the aim of this study. For example, the explanation of RINm5F and STZ could be omitted. So did the mechanism of STZ to decrease the insulin secretion of this sentence “and activation of [poly(ADP-ribose) polymerase (PARP) leading to decrease in insulin secretion”.

2. Methods

The sub-section of “cell culture” could be omitted, because the specific operation was included in the sub-section of “assay procedure”.


Discretionary Revisions

Results & Discussion

Paragraph 1: “Development diabetes mellitus” in the second sentence in the “Results & Discussion” section should be changed to “diabetes mellitus development”.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a
Declaration of competing interests:
I declare that I have no competing interests.