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: 2 Date: 25 July 2013

Reviewer: Dongbo Liu

Reviewer's report:

• Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

None.

• Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

--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?

-- The effect in case of Phyllanthus emblica was statistically significant which has been mentioned in the manuscript as well as in the table representing the effect of P.emblica on MDA levels. In case of C. longa the decreasing effect was not statistically significant.

--This question is not well answered. It is replied that the effect of Pyhllanthus emblica was statistically significant while the C. longa was not. However, it seems not to be the case from figure 1A and figure 1C.

The author should focus on the statistical significance of difference for some comparison. If there was no statistical difference, it is not significant for the level of decrease or increase. Also, it could not conclude the effect of these 3 plants. For example, (1) the anti-oxidant potential of these 3 plants per se could not be deduced according to their MDA release variation; (2) sub-section “effect on apoptosis”, paragraph 2: “subsequently increasing number of cells in G0/G1 population marked as M2 (45.28 ±5.61) as against the STZ treated RIN cells (39.13 ±6.69)”, it showed no statistical difference between “45.28 ±5.61” and “39.13 ±6.69”. Thus this “increase” is not significant; (3) sub-section “effect on apoptosis”, paragraph 3: “…except at higher concentrations viz., 25 and 50mg/ml”, however, there is no statistical difference at concentration of 25 and 50mg/ml which means no effect as the other concentration; (4) sub-section “effect on apoptosis”, paragraph 4: Though it is seemed that the data of M2 (48.64 ± 1.3) is larger than the data of “40.01 ± 9.17”, it is not statistically significant. It could not conclude that “increasing the cell in G0/G1 population …”;

(5) it is not significant to conclude “increase” insulin secretion with no statically significant difference.

Results & Discussion, sub-section “effect on apoptosis”, paragraph 3: Please
re-check the data of the sub G0 (apoptotic) (10.94 ± 3.78) and G0/G1 cell population (51.75 ± 5.09) at 10µg/ml Cl combined with STZ treatment.

Results & Discussion, sub-section “effect on apoptosis”, paragraph 4: It is mentioned that Tc did not affect the number of cells in sub G0 population. However, it is not consistent with the data showed in the table 1.3 that there is significant difference between treatment of “Cells + Tc 100 µg/ml (24.69 ± 2.19)” and “cells (5.87 ± 1.70)”. 

Results & Discussion, sub-section “effect on apoptosis”, paragraph 5: Why compared the data “53.22 ± 11.81” with “40.24 ± 6.71” to explain the protection of Glibenclamide against the apoptotic damage induced by STZ? 

In the adding discussion of the possible active ingredients, alkaloids and glycosides in the Tc has been reported to play an anti-diabetic role. How about these two constituent contained in Pe?

• Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)
  None.

**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 statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.