Reviewer's report

Title: The Effects Of Semi-Purified Extracts Of Commelina Benghalensis (Commelinaceae) On Growth-Associated Molecular Events Of Apoptosis And Cell Division Cycle Of Jurkat-T Cells

Version: 1 Date: 28 September 2013

Reviewer: James J Wachira

Reviewer's report:

- Major Compulsory Revisions

Background:
1. In the first paragraph the authors have neglected to mention that some plant/natural product based anticancer drugs are standard therapies for many types of cancer and the section should be re-written to highlight some important ones like taxol and vinblastine.

2. Too much effort is devoted to explaining basic information of cell division that can be found in any textbook but nothing is said about the genes being studied and how they influence cell cycle and death.

Results and Discussion:
3. Differential gene expression results need to be supported through a quantitation step and, perhaps, reported as ratios or percentages of internal control expression levels. Firm interpretation of the data in this section must await such objective analysis.

4. The comment above on gene expression notwithstanding, the statements in the conclusion about F1 inhibiting the proliferation of JT cells through up-regulation of p53 are not substantiated. What the authors may have shown is a correlation between the inhibition of proliferation and increased expression of p53, but not a cause and effect relationship. To make such a conclusion, they would have to obtain direct evidence; for example, they could demonstrate the loss of the said effects of these extracts after ablating p53 using siRNA or a similar technique.

- Minor Essential Revisions

Title:
1. The title is too verbose and could be shortened to more accurately reflect the outcomes of the study. Something along these lines would be appropriate: Semi-Purified Extracts of Commelina benghalensis (Commelinaceae) Induce Apoptosis and Cell Cycle Arrest in Jurkat-T Cells.

Abstract:
2. Background: The purpose or aim of the study is missing and the two
sentences could be better coordinated.

3. Results: Simply stating that genes were upregulated or downregulated would improve the reading rather than "down-regulatory/up-regulatory effect in the expression level," which does not add any new information or clarity. The same can be said about the first section whereby stating that "the fractions induced cell cycle arrest in the G1/S interphase" would appear to be adequate. The phrase "--the protein Bax--" should simply be "Bax was detected at the transcript but not protein level while p21 and p53 were not detected either by technique". However, JURKAT cells are widely utilized in research and the authors should try and reconcile their inability to detect some of these genes with what is reported in literature.

Background:

4. First sentence-"uncontrolled growth of normal cells--" normal might not be the right adjective to describe cancer cells.

5. Second sentence: Cancer is associated, not considered to be associated, with high morbidity and mortality.

Materials and Methods:

6. Cell proliferation-microscope’s manufacturer is provided but not the model.

7. It is not mentioned how the primers were designed.

8. Section 2.7: Why were the cells harvested by centrifuging at a high-speed of 19,283xg?

9. In some cases the reagent manufacturer’s name, city and state are provided and in other cases only the name is given.

Results/Discussion:

10. C. benghalensis is italicized inconsistently.

11. Explain what "--JT cells are irreversibly developed--" means.

12. The mechanism of cell death is identified as apoptosis through nuclear staining but the corresponding data is not shown. Findings presented in the abstract and conclusion sections need to be supported by one or more figures because of the implied significance.

13. Is it realistic to state that the population of cells in S phase increased from 29.35% to 29.88% or is it better to state that there was no change at this time point?

14. The last sentence of the section entitled "Effects of the F1 and F2 fractions on the mRNA expression levels of Bax and Bcl-2" states that the levels of Bax mRNA are up-regulated in control cells rather than saying that treatment is decreasing expression.

15. The interpretation that lack of detection of Bax through immunoblotting was a result of protein degradation would appear to be premature as this could have arisen from a technical problem, such as a bad antibody. Was a positive control tested? The same can be said about p53, which was not detected in F2 treated
cells.

15. A grayscale version of figure 6 would be more informative plus the alignment of the panels is not accurate and is likely to confuse readers.

- Discretionary Revisions

Methods: The techniques are standard and widely used making it unnecessary to refer to them as "the--technique". However, if deemed necessary, they should be stated in full and abbreviated at place of first occurrence, e.g., RT-PCR is spelled out in the section following.

**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'