Reviewer's report

Title: Inhibition of DNA methyltransferase activity and expression by treatment with the pan-deacetylase inhibitor panobinostat in hepatocellular carcinoma cell lines

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Reviewer: Chunmei Wang

Reviewer's report:

In this paper, the authors have shown that the DAC inhibitor panobinostat could regulate the activity and expression of DNMT1 and DNMT3a in HepG2 and Hep3B cell lines and in a HepG2 xenograft model. They also demonstrated that the drug down-regulated the methylation of two tumor suppressor genes APC and RASSF1A and upregulated the mRNA expression of APC at different time points. Overall, the hypothesis is logical and the experiment was well designed. However, some major revisions need to be made before a decision can be made.

- Major Compulsory Revisions
  1. Figs. 1-3 should include the data of the untreated controls (0h).
  2. Fig. 4 should include the untreated tissue as control.
  3. In the discussion part, the author should discuss more about their own results and findings by comparing their findings with others' previous findings. For examples, why the DNMT3b was not affected by the panobinostat in this paper while DNMT3b mRNA stability is decreased by another DACi TSA as shown in the paper by Xiong et al. (reference 23).
  4. Figure 6 is not revealing the findings found in this paper. The author can either delete the figure, or add APC and Rassf1A into the figure.

- Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
  1. Wrong use of punctuation. All the number labels at Y axis should change from “,” to “.”, such as change “0,2” to “0.2”.
  2. The labels “mean relative expression” of the Y axis are confusing. The author can label them as “normalized expression” or “relative expression”. Moreover, in Figure 1 B and 1C, the results were first normalized to GAPDH level and then to the untreated controls, as they mentioned in the figure legend. So the label in the brackets (normalized to GADPH) is confusing and unnecessary.
  2. In Figure 2, the untreated lanes should add the symbol “-“.
  3. In figure 2, DNMT3b IN Hep3B has two bands.
  4. Figure 3A,B and D, even after the untreated controls have been added, “1” should be labeled on the Y axis to make it easier to compare between different groups.
5. In the protein extraction and western blot analysis, change β-actin to α-actin.
6. Change approx. to approximately.

Discretionary Revision
1. The author may consider add the cell line names (HepG2 and Hep3B) on the top of Figs.1B and 1C to make them easier to understand.

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

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.