Reviewer’s report

Title: Oral intake of Phenylbutyrate and vitamin D3 upregulates the Cathelicidin LL-37 in human macrophages: A dose finding study for treatment of tuberculosis

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Reviewer: Eun-Kyeong Jo

Reviewer’s report:

The manuscript “Oral intake of Phenylbutyrate and vitamin D3 upregulates the Cathelicidin LL-37 in human macrophages: A dose finding study for treatment of tuberculosis” by Mily et al. showed that clinical trials with PB and vitamin D3 effectively induce the LL-37 expression and killing of Mtb in MDM, suggesting a potential application in the treatment of TB.

Overall, this paper is of high relevance and interest. The overall quality and presentation would be sufficient to be published in BMC Pulmonary Medicine. I highly recommend the paper for publication after 'minor essential revision'.

1. There are several important studies on the mechanisms of the vitamin D-cathelicidin-induced antimicrobial effects against mycobacteria, including Liu et al. (2006, 2007) through direct killing effects and Yuk et al. (Cell Host Microbe, 2009) and Campbell et al. (PLoS Pathogens, 2012) through antibacterial autophagy activation. Although the authors cited Liu paper, more discussion will nicely support the background of their clinical trial study.

2. Were there any side effects on the liver function in the volunteers participated in the study? For example, the AST/ALT ratio or other lab data should be shown in the treated subjects.

3. The statistics and p-value should be clarified among groups in the figures.

4. The reason why the group who intake PB 500 mg (neither high nor low dose) showed significance should be discussed.

5. The authors need to be careful and clarify the terms ‘vitamin D3’, ‘25(OH)D3’, or ‘1,25(OH)D3’ throughout the paper.

Level of interest: An article of outstanding merit and interest in its field

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'