Reviewer’s report

Title: The effects of phosphanegold(I) thiolates on the biological properties of Acanthamoeba castellanii belonging to the T4 genotype

Version: 0 Date: 31 Jan 2017

Reviewer: Yuxiang Zhang

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Amoebiasis is one of the leading causes of death from parasitic diseases worldwide, and there is a need for the development of new antiamoebic agents. Previous studies have reported that phosphine gold complexes exhibited a different spectrum of in vitro activity against several strains bacteria and fungi. In this study, the author used different assays to show that Acanthamoeba Castellanii (T4 Genotype) is resistant to Phosphanegold(I) thiolates and thus could serve as a model to study mechanism of metal resistance.

Major Comments:

1 Although gold complexes have been shown to possess anti-bacteria and anti-microbial activities, very few reports have shown they have anti-amoebic activity except for gold complex with metronidazole. The author has studied Phosphanegold(I) thiolates in the cancer context before. Are there common pathways identified that could be important for Acanthamoeba survival or cyst formation, which suggested it could have anti-amoeba activity? In other words, how is this compound expected to have anti-amoeba activity?

2 How about combining Phosphanegold[I] thiolates with current anti-amoeba drugs, such as chlorhexidine or metronidazole? Will Phosphanegold[I] thiolates enhance efficiency of these drugs, given that the author predicted it could have anti-amoeba effects? How about combined treatment with other drugs in the Amoebistatic assays and encystation assays as well?

3 Some of the Phosphanegold[I] thiolates trended towards a positive results in one or two of the assays, such as the AAu2 in Fig. 2A. Is it possible to have a more significant effect at a higher dose?

Level of interest

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An article of limited interest

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Acceptable
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