Reviewer’s report

Title: Natural resistance to ascorbic acid induced oxidative stress is mainly mediated by catalase activity in human cancer cells and catalase-silencing sensitizes to oxidative stress

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Reviewer: stanislav janousek

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Manuskript Christoph Klingelhoeffer et al. “Natural resistance to ascorbic acid induced oxidative stress is mainly mediated by catalase activity in human cancer cells and catalase-silencing sensitizes to oxidative stress” demonstrates a cytotoxic effect of ascorbic acid in the range of 5-100 mmol/L using a panel of human cancer cell lines, glioblastoma and carcinoma. The authors studied the role of hydrogen peroxide in cancer cell and well documented the impact of the diminished activity of the hydrogen peroxide-detoxifying enzyme catalase (or its expression) on cancer cell survival. A correlation among catalase activity, cancer cell survival and their susceptibility to ascorbic acid was well documented. To highlight the protective role of catalase on the resistance of cancer cells to oxidative cell stress in more details, the authors modified the expression of catalase in the breast carcinoma cell line BT-20, which cells were shown to be highly resistant to the exposure to ascorbic acid previously. They found that the catalase-silenced BT-20 cells became more susceptible to the concentrations of ascorbic acid suggesting that the silenced catalase expression significantly increased the susceptibility of the formerly resistant cancer cell line BT-20 to ascorbic acid exposure. On the other hand, this study also well documentes that some cancer cell lines were unable to protect themselves against oxidative stress when exposed to ascorbic acid (fifty-five percent of the human cancer cell lines tested) thus showing that the subject of the resistance of the cancer cells to oxidative stress is more complex.

To summarize my manuscript reading, the authors have written a scientific paper with a high quality to be published and further studies will surely bring more details about this highly interesting subject. The Introduction and the Materials and Methods sections as well as the discussion are appropriately written. The authors are accountable for detailing the data information and their limitations. The literature review is also given acceptably. Reporting the results and methods of statistic analysis is comprehensive. The authors clearly interpreted what their paper added (focusing on the aspect and future research). Their work explicitly and innovatively contributes to our contemporary knowledge of the natural resistance to ascorbic acid induced oxidative stress using human cancer cell lines under in vitro experiments.
Level of interest: An article of importance in its field

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'