OPEN PEER REVIEW REPORT 1

Name of journal: Neural Regeneration Research
Manuscript NO: NRR-D-20-00308
Title: Hydrogen sulfide enhances adult neurogenesis by activating Akt/GSK-3β/β-catenin signaling in the MPTP mouse model of Parkinson's Disease
Reviewer's Name: Fabricio Ferreira de Oliveira
Reviewer's country: Brazil

COMMENTS TO AUTHORS

In this study, the authors used NaSH as an H2S donor, and established a MPTP/p mouse model of Parkinson's disease to study the role of H2S in ameliorating its pathogenesis. They found that H2S regulates adult neurogenesis in the pathogenesis of Parkinson's disease in mice via Akt/GSK-3β/β-catenin pathways to delay the loss of dopaminergic neurons. They concluded that H2S is a new potential therapeutic alternative for Parkinson's disease.

The study is interesting, and was well designed. The figures are very illustrative and didactic. I have a few comments to improve readability.

Instead of "elderly", I suggest that the authors use the term "older people".

The last paragraph of the Introduction should be restricted to the aims of the study, and not disclose the results or the conclusions of the authors.

Still in the Introduction, I missed a deeper explanation of the GSK-3β pathway, which is knowingly modulated by Lithium. Is there a cross-mechanism linking the effects of Lithium with the mechanisms of H2S in the pathogenesis of Parkinson's disease?

OPEN PEER REVIEW REPORT 2

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Manuscript NO: NRR-D-20-00308
Title: Hydrogen sulfide enhances adult neurogenesis by activating Akt/GSK-3β/β-catenin signaling in the MPTP mouse model of Parkinson's Disease
Reviewer's Name: Endre Pal
Reviewer's country: Hungary

COMMENTS TO AUTHORS

The authors investigated the effect of H2S in a MPTP-induced mouse model of Parkinson' disease (PD). The model is well known and the effect of H2S is not a new finding, because it was already published by Kida et al. in 2011.
The protective effect of H2S was recently proved in the 6-OHDA model of PD, and the beneficial effect was explained by its antioxidant and anti-apoptotic properties in both models.
The intraperitoneal administration of NaHS instead of inhalation of H2S is an easier and more reproducible way of study. They used in vivo and in vivo models as well.
The methods used here are well established and the results are acceptable.
Here the authors proved that beyond the neuroprotective effect of H2S it enhances the regenerative capacity in the subventricular zone via the beta-cathenin pathway.
Although in the animal experiments the number of animals was indicated as 6 in each group, but the reproducibility of experiments were not mentioned.
Furthermore, the only way of NaHS administration was started before MPTP/p administration. Did they perform further studies to investigate the NaHS effect starting administration after MPTP/p treatment? The pure effect of NaHS on naive animals was neither presented nor mentioned, did they performed this type of investigation?