OPEN PEER REVIEW REPORT 1

Open peer reviewer: Christopher J Andrews, University of Queensland, School of Medicine, Australia.

Comments to authors:

My first comments are briefly on the text and paper itself. There are a couple of places where the authors may overstretch the conclusions that can be drawn from the research. They are simple to deal with and should not delay the authors in any real sense.

They state that their findings suggest that "SB may have an antidepressant profile ….". While this is probably true, it is not something that can be drawn from this study. The study is couched in terms of hippocampal effects from radiation, and then on subsequent cognitive impairment and especially memory. It is well known that the hippocampus suffers atrophy in depression, and this might be a useful observation for the authors to make. Their experiments suggest that pretreatment with SB attenuates these cognitive aspects. They don't address depression as such. The antidepressant effect of SB is not really addressed in the study, only the cognitive, and their findings (excellent as they are) do not address SB as a treatment for established depression. Their findings are only addressed to PRE-treatment with SB. A minor point, but in the interests of accuracy, should be clarified.

I like their wording when they suggest "neurogenesis …. is regulated by … environmental, endocrine, and pharmacological stimuli." My own research has been in the environmental aspects, and hence this study is of significant interest. My own research has postulated that an environmental stimulus can lead to an endocrine stimulus. I think the authors would agree with this, and their study supports the possibility.

My second comments are purely personal, and simply set out where my mind goes raising questions which take the conclusions of the study further. They require no attention from the authors, although as interesting side issues, they might be side comments in discussion. But there is no absolute need to address them.

My interest in hippocampal loss due to traumatic environmental stimuli have caused me to consider treating victims' ongoing disability following the trauma. This study provides very significant input to the ongoing research into mechanisms in this area. My mind notes that this study is about PRE-treatment. Despite my comments above, I am wondering if SB can provide treatment AFTER the injury syndrome is established. Subsequent questions coming to me are how long after might it still be useful, and in what dose. Mind you, a search of my prescribing literature does not indicate a readily available source to administer to outpatients.