OPEN PEER REVIEW REPORT 1

Name of journal: Neural Regeneration Research
Manuscript NO: NRR-D-19-00008
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Date sent for review: 2019-03-18

Comments to authors:
In this manuscript, the authors described that GLP-1R agonist reduced inflammatory response in hippocampus after SNL, resulting in attenuation of pain-induced cognitive impairment in rats. This report was quite interesting and show potential treatment strategy for neuropathic pain with cognitive impairment. However, several steps were missing to understand neuropathic pain and pain-induced cognition after intrathecal infusion of exendin-4.

Major concerns:
1. Morris water maze (MWM) is a test to evaluate spatial learning and memory to evaluate drug, lesion-induced changes, or genetic manipulation of brain. SNL will affect swimming ability. Please present references of MWM after peripheral nerve injury or pathological condition in hindlimbs.
2. Please present other evaluations for cognitive or emotional factors after SNL. It is not enough with only MWM for the condition.
3. Further observation should be needed beyond 14 days in Figure 1。
4. Pentobarbital anesthesia is not recommended for rat surgery (Laboratory Animal Anaesthesia by Paul Flecknell).

Minor concerns:
1. It is not clear which samples are measured in ELISA. Please mention it in the Materials and Methods (page6, line 3).
2. Please mention which areas of the brain are evaluated by immunohistochemistry in the Materials and Methods (page6, line 11).
3. Please add headings in the pictures of Figure 3A. Nuclear staining at least will support a data which locations are evaluated in the pictures.
4. Colabeling of neuron marker such as NeuN with GFAP or Iba1 will help which locations of the brain are evaluated in the pictures of Figure 4A.