

OPEN PEER REVIEW REPORT 1

Reviewer: Universidad Autonoma de Barcelona, Biologia Celular, Fisiologia i Immunologia, Spain.

Comments to the authors:

The mechanism study of testosterone on cognitive dysfunctions in Alzheimer's disease model rats induced by beta amyloid 1-42.

In this manuscript, the authors have examined the protective mechanism of testosterone administration on cognitive dysfunctions in male rats induced by bilateral ventricle injections of the β -amyloid 1-42 oligomers. The authors have found that testosterone injection improves behavioral activity in the Morris water maze and increases the number of pyramidal cells and dendritic spine density in the Cornus Ammonis-region 1. The androgen receptor antagonist flutamine blocked the protective effect of testosterone administration on the behavior in the Morris water maze.

After carefully reading this manuscript, my view is that it is interesting and is well written. Following revision, it may be suitable for publication in Neural Regeneration Research. However, there are several points that need attention.

- Section entitled "Morris water maze". The authors should indicate:

- * The size of the pool and the platform.
- * Was the water stained with non-toxic white tempera.
- * Was each trial started in a different point of the pool?
- * Was the hypothermia prevented?

- Section entitled "animal grouping"

- * The authors should indicate the dose of testosterone. For example, "based on published studies (put here one reference), the dose of 1 mg/g b.w was chosen".
- * The authors said: "rats in F group were injected 1h before testing daily at 5 μ g into bilateral ventricles. Again, it is necessary to indicate the dose and the rate of administration. For example 1 μ g/min.
- * It should explain why testosterone was not injected into bilateral ventricles.

- Section entitled "preparation of tissue sampling"

- * Were the brains sectioned in the coronal plane?
- * The authors should indicate why the hippocampal CA1 region was studied. Do they have results about CA2, CA3 and CA4 regions?

- Section entitled "Statistical analysis"

- * Were the results evaluated with the non-parametric Mann-Whitney U-test or with the Student t-test?

Figures

- * In figures 3-5 no scale bars are provided.