Reviewer's report

Title: An investigation into the ameliorating effect of black soybean extract on learning and memory impairment

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Reviewer: Marcin Ozarowski

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Review

„An investigation into the ameliorating effect of black soybean extract on learning and memory impairment”

by Ji Hee Jeong, Hyeon Ju Kim, Seon Kyeong Park, Dong Eun Jin, O-Jun Kwon, Hyun-Jin Kim, Ho Jin Heo

The presented work aims to study the neuroprotective in vitro and neuropharmacological in vivo examinations of the non-anthocyanin fraction from a black soybean seed coat extract and phytochemical assessment of this fraction.

In these studies the following methods were used: the PC12 cell line - to evaluation of cellular A#-induced oxidative stress, and to determination of cell viability (MTT reduction assay), and mice - in order to perform the Y-maze and passive avoidance test after intracerebroventricular (ICV) injection of A#1-40. All tests were carried out before and after application of non-anthocyanin fraction in comparison with control groups. Moreover, to phytochemical study of non-anthocyanin fraction was used an ultra-performance liquid chromatography (UPLC/MS) according to chemical standards.

Article presented multidisciplinary and very interesting studies.

My answers, suggestions and comments:

Is the question posed by the authors well defined?

In my opinion, Authors should clearly write aims of this study, because I do not found out section (or paragraph) about full aims.

There are many publications with studies of extracts from a black soybean seed coat, however indeed there is little information available on the biological and pharmacological effects of non-anthocyanins extracted from the black soybean seed coat.

2. Are the methods appropriate and well described?

The methods are well described.
3. Are the data sound?

The data are sound.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

All parts of manuscript were described correctly, according to the guidelines for authors of original research.

5. Are the discussion and conclusions well balanced and adequately supported by the data?

It seems that Authors should write that various extracts from soybeans influence the central nervous system (phytoestrogens, phenols, lipid fraction). Moreover, Authors should compare the results with other studies. There is no information, which extract from soybeans showed better neuroprotective effect or effectiveness in increasing the memory in animals. Do non-anthocyanin fraction has more therapeutic potential in comparison with extracts with anthocyanins or phytoestrogens (or crude extracts)? It seems, that Authors should inform about activity of epicatechin, procyanidin B1, and procyanidin B2 (according to available data). It is not clear, whether these compounds have been previously tested in the same animal model of Alzheimer disease.

Furthermore, Authors don't write about statistical significance of results (Duncan test, ANOVA). There is no information about statistical correlation between antioxidative results and neuroprotective effects, and between results from Y-maze and passive avoidance tests.

The rest of discussion is correct.

6. Are limitations of the work clearly stated?

The authors write only that more investigations are needed to understand the precise mechanisms of action of these phenolics in the non-anthocyanin fraction from black soybean seed coat.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

I found one inaccuracy (error) (line 130) in the appointment of the publication. It seems that in work (Kong SZ et al. Protective effects of hydroxysafflor yellow A on #-amyloid-induced neurotoxicity in PC12 cells. Neurochem Res. 2013 May;38(5):951-60) were studied Hydroxysafflor yellow A - a major active chemical component isolated from Carthamus tinctorius L., but not from black soybean.

It seems that another publications may be used in this place, e.g.


To date, it was published many articles on the effects of phytoestrogens on the CNS, e.g.

There are also publications about polyphenols occurring in soybean seeds.

The authors did not cite above works.

8. Do the title and abstract accurately convey what has been found?

The title is not correct. Authors should write “An investigation into the ameliorating effect of soybean extract on learning and memory impairment with assessment of neuroprotective effects. Information included in the title is too general.

In abstract Authors should write MTT as full name similar as lactate dehydrogenase (LDH) (line 56). In conclusion (line 77) of abstract, Authors written “fractions”, it seems that this study is focused on one fraction. Authors should write the word “phenolicss” correctly (line 80).

9. Is the writing acceptable?

In my opinion the paper after minor changes could be accepted.