Reviewer's report

Title: A pilot placebo-controlled, double-blind, and randomized study on the cognition-enhancing and anti-stress benefits of a proprietary chicken meat ingredient in healthy subjects

Version: 1 Date: 16 April 2013

Reviewer: Jonathan Ling

Reviewer's report:

Major Compulsory Revisions

1. Ten participants in each group was large enough to detect differences, however because we know so little about the participants there remains the possibility that the results could have been due to chance. It is also possible that participants in one group could have had a protein-deficiency that was simply addressed by EoC. A sample/power calculation should be included to demonstrate to readers that 20 participants were indeed sufficient.

2. In order to enable comparisons with other studies that have examined EoC, the authors should state more clearly (if this is the case) that the substance being tested is EoC, and that it is only the means of extraction that is proprietary. As written, it is possible that readers could misinterpret the information (eg in section headed CMI-168) presented and believe that bioengineering of the EoC itself has taken place (which is implied by the first line of the conclusion).

3. In the discussion, prior work is referred to that has examined the effect of acute stress on cognitive processing This is different to the mild stress experienced by the participants in the current study. This needs to be clarified. Related to this, is it being argued that the mechanisms for acute stress and mild stress are the same? I think this is unlikely; more probably is that there are qualitative differences that are at least present in the subjective experience of stress. The relevance of the research on acute/chronic stress needs to be made clearer.

4. Is there any evidence to suggest that ‘the constantly stressful environment might pose a continuous homeostatic imbalance…’. Is there anything uniquely stressful about modern environments? It is argued elsewhere in the manuscript that some stress (ie mild stress) can be helpful. This calls into question the whole reference to stress throughout the document. The focus would be better on the cognitive issues throughout the paper. Reference to stress could be removed from the manuscript without affecting the conclusions drawn.

5. Reference to the anti-stress properties are inappropriate as there is no evidence to support this (the results show no differences between the groups) and should be removed from all sections of the manuscript.

Minor Essential Revisions
1. The research question posed – does supplementation with a proprietary chicken product improve cognitive performance is clearly stated. Evidence is provided for the impact of similar supplements on cognition, therefore the current study represents an incremental advance on earlier work. The current study differs in that proprietary technology has been used to extract the chicken essence; a case needs to be more strongly made for the advances made by the current study.

2. Discussion of the HPA axis, etc. (the first part of the introduction) is not clearly linked to the rest of the introduction, and can probably be deleted.

3. More information is needed about the participants in this study. This information should be placed in the subject section, and not in a separate section on sample characteristics in the results. Where were they recruited from? How were they recruited? Did any drop out (we only have the final numbers in the study presented in the results)? Was compliance measured (eg were participants encouraged to return any unused capsules to the research team)? Were participants asked if they had complied?

4. What exactly is meant by ‘An independent investigator… maintained a record of all the samples’?

5. Is data available in relation to whether participants were (for example) vegetarian/vegan?

6. In some instances the placebo group is referred to as the control, in others the supplemented group is referred to as the test group. Reference to each group should be made consistent throughout.

7. What does GCP stand for? CMI-168 is referred to as CMI-528 in the Placebo section of the Method; missing ‘the’ before Beck Inventory’ in Measurement section of Method. I don’t think we need to know the concurrent validity of the BAI with the Hamilton rating. ‘Efficious’ should be efficacious in the discussion.

8. The part of the paragraph in the discussion starting ‘In the current study…’ and going down to ‘…and episodic memory’ is a repeat of the abstract and should be deleted.

9. Much is made of the difference between digits backward and digits forward measures in the results, but separate data are not provided to compare them.

10. The standard of the English is good. The figures are generally fine, although the error bars are difficult to see in some instances.

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests