Reviewer’s report

Title: Acute effects of brewed cocoa consumption on attention, motivation to perform cognitive work and feelings of anxiety, energy and fatigue: A randomized, placebo-controlled crossover experiment

Version: 0 Date: 12 Sep 2016

Reviewer: Rebecca Randell

Reviewer’s report:

This manuscript does build on from previously published paper, in particular a recent study by Massee et al (2015)), using a 4 group experimental study. Although you have collected this data the statistical and descriptive comparison between the four groups is not included in the current manuscript.

Firstly, the study by Massee et al (2015) is a key reference in this area and is not discussed in your manuscript and, of interest, 38 participants were used for a two group comparison study. It is evident that you completed a statistical power calculation to determine the sample size for your study however; this was based on a 2 group x 4 time interaction design. It is suggested that the statistical power calculation is performed using a 4 group x 4 time interaction design. This will most likely result in more participants needed to be tested so that a full analysis of your study results can be completed. Therefore, in the current format I recommend that you complete the necessary steps and resubmit this paper once that information can be included.

Further to this main point I have some specifics for consideration:

Title: the wording "sustained attention" is a bit mis-leading. I would consider removing the word sustained.

Abstract: The abstract needs slight rewording. Include number of participants and the timing of the tests in the method section. Condense the reporting of the stats in the results and write them in full in the results section of the main manuscript. Consider rewording the "sustained attention" in the conclusion.

Key words: there are two different sets of key words I recommend removing "caffeine, flavanols, mood, theobromine, vigilance" and keep the keywords that follow the abstract.

Introduction: In general the introduction is written well include the Masse et al (2015) study and explain how this study could be expanded on.

Introduction: Consider using abbreviations for the 4 trials groups so that if easier to determine what trial is being discussed throughout the manuscript.
Method: Reformatting this section would make it flow better for the reader. The Procedure of the study should come before the detailed explanation of the cognitive tasks.

Method: Tables were in the manuscript text in the method section but not in the results section. Follow the correct journal guideline procedure.

Method: Please provide more information on the time between trials and compare this with other studies. Is the wash out between trials long enough?

Results: 4 group x 4 time-interaction results (see above comment)

Discussion: Potentially would need re-wording following the additional participants/ group comparison.

Discussion: would adding more participants negate the need to state that the study was not "full randomised". This is of concern if the study is to be resubmitted.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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I am an employee of the Gatorade Sports Science Institute however the views on this review are my own

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