

Comment

Comment on Hack et al. Effect of Guarana (*Paullinia cupana*) on Cognitive Performance: A Systematic Review and Meta-Analysis. *Nutrients* 2023, 15, 434

Tom Gurney *  and Flaminia Ronca

Division of Surgery & Interventional Science, University College London, London W1T 7HA, UK; f.ronca@ucl.ac.uk

* Correspondence: t.gurney@ucl.ac.uk

We have read the recent systematic review and meta-analysis by Hack et al. [1] entitled “Effect of Guarana (*Paullinia cupana*) on Cognitive Performance: A Systematic Review and Meta-Analysis” with great interest and we appreciate the authors’ contribution to this emerging field. We would like to draw the authors and reader attention to recently published data [2] which may support and strengthen their overall conclusions. Hack and colleagues raise several important points in their discussion and suggest future recommendations. Some of these have already been addressed in recent findings that were published before the submission of the systematic review and meta-analysis.

Hack and colleagues state that “*whether such performance changes are linked to the caffeine content or other bioavailable substances in guarana is unknown*” and suggest that “*future studies might investigate this further through matched-dose comparison trials between caffeine and guarana*”. Indeed, the study design and results of our recent investigation evaluated just that. Our paper was also in alignment with the suggestion that “*the caffeine content of guarana be expressed relative to body mass so that results become comparable in the future*”. The results of our study contribute to growing evidence that caffeine cannot act exclusively (following a matched 5 mg/kg caffeine dose to guarana supplementation) when positive effects on cognition are observed [2]. It is apparent that the combination of caffeine and other components contained within guarana, such as saponins, tannins, theobromine and theophylline, may provide superior simulant-like effects [2]. However, more research is certainly warranted. We concur with the authors that in their study “*ascertaining the added benefit above caffeine is not clearly seen in the studies included in the present analysis*” and hope that our findings in particular might further elucidate this gap in the field surrounding this topic area.

We would also like to point the authors and reader to the effect of guarana supplementation on cognition in the context of exercise [2–5]. The wider applicability of guarana supplementation may be pertinent to activities that require bursts of high-intensity exercise accompanied by rapid decision making, including team sports, modern Pentathlon, law enforcement and military applications [2], aiding the interpretation and translation of the results into real-world practice. We thank the authors for their contribution to the field, and we concur with the observations made during the completion of their systematic and meta-analysis review.

Author Contributions: All authors were involved in drafting this manuscript or critically revising it. Writing—original draft preparation, T.G.; writing—review and editing, F.R. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest: The authors declare no conflict of interest.



Citation: Gurney, T.; Ronca, F. Comment on Hack et al. Effect of Guarana (*Paullinia cupana*) on Cognitive Performance: A Systematic Review and Meta-Analysis. *Nutrients* 2023, 15, 434. *Nutrients* 2023, 15, 2000. <https://doi.org/10.3390/nu15082000>

Academic Editor: Marilyn Cornelis

Received: 21 February 2023

Revised: 24 February 2023

Accepted: 17 April 2023

Published: 21 April 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

References

1. Hack, B.; Penna, E.M.; Talik, T.; Chandrashekhar, R.; Millard-Stafford, M. Effect of Guarana (*Paullinia cupana*) on Cognitive Performance: A Systematic Review and Meta-Analysis. *Nutrients* **2023**, *15*, 434. [[CrossRef](#)] [[PubMed](#)]
2. Gurney, T.; Bradley, N.; Izquierdo, D.; Ronca, F. Cognitive Effects of Guarana Supplementation with Maximal Intensity Cycling. *Br. J. Nutr.* **2022**, 1–21. [[CrossRef](#)] [[PubMed](#)]
3. Pomportes, L.; Brisswalter, J.; Casini, L.; Hays, A.; Davranche, K. Cognitive Performance Enhancement Induced by Caffeine, Carbohydrate and Guarana Mouth Rinsing during Submaximal Exercise. *Nutrients* **2017**, *9*, 589. [[CrossRef](#)] [[PubMed](#)]
4. Pomportes, L.; Brisswalter, J.; Hays, A.; Davranche, K. Effects of carbohydrate, caffeine, and guarana on cognitive performance, perceived exertion, and shooting performance in high-level athletes. *Int. J. Sport. Physiol. Perform.* **2019**, *14*, 576–582. [[CrossRef](#)] [[PubMed](#)]
5. Pomportes, L.; Davranche, K.; Brisswalter, I.; Hays, A.; Brisswalter, J. Heart rate variability and cognitive function following a multi-vitamin and mineral supplementation with added guarana (*Paullinia cupana*). *Nutrients* **2014**, *7*, 196–208. [[CrossRef](#)] [[PubMed](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.