Letter to Editor

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Commentary on Boswellia and Ginger for Memory Dysfunction in Mild TBI

***Mohammad Farhadi*[1*]**

[1]*Clinical Research Development Center, Amir Oncology Teaching Hospital, Shiraz University of Medical Sciences, Shiraz, Iran*

***Corresponding author:** *Mohammad Farhadi*
Address: Amir Oncology Teaching Hospital, Shiraz, Iran.
Tel/Fax: +98 71 36325655;
e-mail: fsunroo@gmail.com

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Dear Editor

I commend the authors for their insightful manuscript "Effect of a Boswellia and Ginger Mixture on the Memory Dysfunction in Mild Traumatic Brain Injury Patients: A Randomized, Double-Blind Controlled Trial"[1]. This study investigated whether a combination of Boswellia (360 mg) and ginger (36 mg), administered three times daily (marketed as "Memoral"), could improve memory deficits in patients with mild traumatic brain injury (mTBI).

One hundred patients were randomized (1:1) into either the intervention or placebo groups. All participants reported subjective memory dysfunction post-injury. Memory performance was assessed at three-time points: baseline (approximately one-week post-discharge), after one month (completion of the intervention), and after three months, using the Persian version of the Rey Auditory-Verbal Learning Test (AVLT).

Strengths of the Study

1. ***Randomized, Double-Blind, Placebo-Controlled Design:*** The study's robust methodology included permuted-block randomization to ensure balanced allocation and a rigorous double-blind approach, minimizing performance and detection bias.
2. ***Appropriate Sample Size Justification:*** A pre-study power calculation (alpha=0.05, power=80%, and effect size=0.6 determined the sample size, with 50 patients per arm accounting for ~10% attrition. This demonstrated careful planning to detect clinically meaningful differences.
3. ***Validated Outcome Measure:*** The Persian version of the AVLT was used to assess memory domains, including total learning, retroactive interference, and forgetting rate. The Persian version utilized in this study had been previously validated [2], further strengthening the reliability of the findings.
4. ***Clear Reporting of Time Points:*** Outcomes were measured at baseline (1-week post-discharge), 1 month (intervention end), and 3 months (2 months post-intervention), allowing evaluation of both short- and intermediate-term effects.
5. ***Use of Both Absolute and Change Scores:*** The analysis compared means at each time point and changes from baseline, which provided a comprehensive view of between-group differences and individual change patterns over time.
6. ***Clinical Relevance in Emergency and Trauma***

Settings: TBI represents a prevalent global health concern in emergency departments [3, 4]. Identifying safe, cost-effective, noninvasive interventions to restore memory function could have significant clinical implications, particularly in low- and middle-income regions where access to specialized rehabilitation services might be limited.

Areas for Further Consideration

1. ***Generalizability Limitations:*** Despite being adequately powered for the primary outcome, the single-center design limits its generalizability. The participant pool might not fully represent the broader mTBI population, which varied demographically, socioeconomically, and clinically. Given the heterogeneous clinical spectrum of mTBI, multicenter recruitment of a more diverse patient population could help evaluate the potential differential efficacy of Boswellia-ginger supplementation across specific subgroups (e.g., older adults, younger athletes, or patients with comorbid mental health conditions).
2. ***Limited Discussion of Potential Confounders:*** mTBI manifests a heterogeneous clinical spectrum [5], with patients experiencing a diverse range of overlapping factors, such as concurrent mood changes [6], sleep disturbances [7], or analgesic use—that can potentially confound cognitive performance. Given this variability, a clearer understanding of participants' concurrent medications and treatments (e.g., cognitive rehabilitation and structured cognitive exercises) would be essential to isolate the specific effects of the herbal mixture. Utilizing standardized assessment tools such as the Hospital Anxiety and Depression Scale (HADS) [7], Pittsburgh Sleep Quality Index (PSQI) [8], and Medication Quantification Scale (MQS) [9], could strengthen the methodological rigor and strengthen the validity of the research findings.
3. ***Lack of Formal Adherence Monitoring:*** While no adverse events were reported, it is unclear how closely they verified participants' compliance with the intervention or placebo (e.g., pill counts, diaries). Consistent dosing proves particularly critical in herbal supplement trials, as it directly impacts treatment outcomes.
4. ***Mechanistic Insights:*** While the authors acknowledge the potential anti-inflammatory properties of Boswellia and ginger, direct measurement of inflammatory biomarkers, particularly those associated with cognitive function, such as IL-6 [4], S100B [10], and TNF-α would strengthen the mechanistic rationale for the observed memory improvements.
5. **Reporting of Adverse Events:** While the article reports no observed adverse effects—which is reassuring—greater methodological transparency regarding safety monitoring (e.g., whether through structured questionnaires or spontaneous reporting systems) would further substantiate these safety claims.

Overall, this trial provided valuable preliminary evidence that a Boswellia-ginger combination might accelerate or enhance recovery from memory dysfunction after mTBI, with benefits sustained over three months. The authors implemented a robust RCT design and reported statistically significant improvements across several memory metrics (Total Learning, Retroactive Interference, Forgetting Rate, Net Positive Score), with no notable adverse effects.

However, as with many single-center trials, replication in larger, multi-center cohorts, with longer follow-up, formal adherence monitoring, and control for additional confounders, is warranted. Future studies incorporating inflammatory and oxidative biomarker analyses could further elucidate the mechanism of action. Despite these limitations, the study's methodology and positive outcomes suggested that the Boswellia–ginger mixture holds promise as an adjunct therapy for post-mTBI memory dysfunction.

Declaration

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