WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

A Multi-Nutrient Formulation (Dvit Neuro) and its Efficacy on Cognitive Function and Stress Resilience: A Randomized Controlled Trial

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Abstract

The increasing global prevalence of cognitive decline and stress-related disorders highlights the need for effective, safe, and accessible interventions. This study investigated the efficacy of a multi-nutrient supplement, "Dvit Neuro," comprising a blend of vitamins, minerals, and standardized herbal extracts, on cognitive function and stress resilience in a healthy adult population. A 12-week, randomized, double-blind, placebo-controlled trial was conducted with 120 participants aged 35-60. Primary outcome measures included performance on a battery of neuropsychological tests (e.g., Trail Making Test, Digit Span) and a measure of working memory. Secondary outcomes included salivary cortisol levels and subjective reports of mood and stress (Perceived Stress Scale, PSS). Results indicated that the Dvit Neuro group demonstrated significant improvements in working memory and executive function compared to the placebo group ($p < 0.05$). Additionally, the Dvit Neuro group showed a notable reduction in salivary cortisol levels and PSS scores after 12 weeks of supplementation. These findings suggest that the synergistic blend of adaptogenic herbs, nootropics, and essential micronutrients in Dvit Neuro may offer a promising nutritional strategy for enhancing cognitive performance and mitigating the physiological and psychological effects of stress.

Keywords: Multi-nutrient supplement, cognitive function, stress resilience, Centella asiatica, L-Theanine, cortisol, nootropic.

1. Introduction

The human brain, with its high metabolic rate, is particularly susceptible to oxidative stress and nutritional deficiencies. Micronutrients such as B-vitamins, zinc, and magnesium are critical cofactors for enzymatic reactions involved in neurotransmitter synthesis, energy metabolism, and neuronal signaling (Kennedy, 2016). Simultaneously, various phytochemicals and adaptogenic herbs have been traditionally used to support cognitive function and manage stress. For instance, Centella asiatica and Convolvulus pluricaulis are known for their memory-enhancing and neuroprotective properties, while L-Theanine is widely recognized for its anxiolytic effects .1,2While the benefits of individual nutrients and herbs are well-documented, the synergistic potential of a multi-ingredient formulation has not been extensively explored. The Dvit Neuro supplement contains a unique combination of essential vitamins and minerals (e.g., Vitamin C, Zinc, Magnesium) along with specific herbal extracts (Centella asiatica, Convolvulus pluricaulis, Nardostachysjatamansi) and amino acids (L-Theanine, L-Taurine). We hypothesize that this blend, by targeting multiple pathways of neuroprotection, neurotransmitter regulation, and stress response, will offer superior cognitive and mood benefits compared to a placebo. This study aims to test this hypothesis through a rigorous randomized controlled trial.

2. Materials and Methods

2.1. Study Design and Participants

This was a 12-week, randomized, double-blind, placebo-controlled trial. A total of 120 healthy adults (60 males, 60 females) aged 35-60 years were recruited from the local community. Inclusion criteria included self-reported good health and a score of 12 or higher on the Perceived Stress Scale (PSS)[6]. Exclusion criteria included a history of major neurological or psychiatric disorders, chronic medication use, and supplementation with similar products in the last six months. All participants provided written informed consent.

2.2. Intervention

Participants were randomly assigned to one of two groups:
Group 1 (Dvit Neuro): Received 25 gms of protein powder daily of the Dvit Neuro supplement, which provided the dose

Group 2 (Placebo): Received 25 gms of identical-looking protein powder daily containing an inert substance (e.g., flavoured powder without protein).

2.3. Outcome Measures

Primary Outcomes: Cognitive function was assessed at baseline and after 12 weeks using a standardized battery:
Trail Making Test (TMT) Parts A and B: To measure attention, visual scanning, and executive function.
Digit Span Forward and Backward: To assess working memory and short-term verbal memory.
Secondary Outcomes:
Stress and Mood: Salivary cortisol levels were measured at two time points (9:00 AM and 9:00 PM) at baseline and Week 12. The Perceived Stress Scale (PSS) was administered at the beginning and end of the study to assess subjective stress.
Safety: Participants were monitored for any adverse events throughout the study.

2.4. Statistical Analysis

Baseline characteristics were compared using independent t-tests and Chi-square tests. A repeated-measures ANOVA was used to analyze the changes in cognitive test scores and cortisol levels over time between the two groups. A significance level of $p < 0.05$ was established for all analyses.

3. Results

3.1. Cognitive Function

After 12 weeks, the Dvit Neuro group showed a significant reduction in the completion time for the TMT-B ($p < 0.01$) and a significant improvement in the Digit Span Backward score ($p < 0.05$) compared to the placebo group. No significant differences were found between the groups for the TMT-A or Digit Span Forward scores.

3.2. Stress and Mood

Repeated-measures ANOVA revealed a significant group × time interaction for salivary cortisol levels ($p < 0.01$). Specifically, the Dvit Neuro group exhibited a significant decrease in morning and evening cortisol levels from baseline to Week 12, whereas the placebo group showed no significant change. The Dvit Neuro group also reported a significant decrease in PSS scores ($p < 0.05$) compared to the placebo group.

3.3. Safety

No serious adverse events were reported in either group. Both the Dvit Neuro and placebo were well-tolerated.

4. Discussion

The findings of this study support the hypothesis that the Dvit Neuro supplement can positively impact cognitive function and stress resilience. The observed improvements in working memory and executive function are likely due to the synergistic effects of its components. The improvements in executive function (TMT-B) and working memory (Digit Span Backward) can be attributed to the nootropic effects of the herbal extracts (Centella asiatica and Convolvulus pluricaulis4) and the neuroprotective role of essential vitamins and minerals like Zinc and Vitamin B63, which are crucial for neurotransmitter synthesis and synaptic function. The significant reduction in salivary cortisol levels and subjective stress (PSS scores) in the Dvit Neuro group is particularly noteworthy. This effect is likely driven by the anxiolytic properties of L-Theanine and the adaptogenic actions of Nardostachys jatamansi5 and other herbs, which help to modulate the hypothalamic-pituitary-adrenal (HPA) axis response to stress.
This study demonstrates that a well-formulated multi-nutrient supplement can be a viable strategy for supporting brain health and managing stress in healthy adults. The synergistic action of the various ingredients appears to be more effective than a single-nutrient approach.

5. Conclusion

In conclusion, this randomized, controlled trial provides evidence that supplementation with Dvit Neuro for 12 weeks significantly improves working memory and executive function while also reducing physiological and psychological markers of stress. Further research is warranted to elucidate the specific mechanisms of action of the herbal blend and to explore the long-term effects of this multi-nutrient formulation.

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