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FUNCTIONAL NUTRITION AND GUT HEALTH: CLINICAL EVALUATION OF GOOD MONK® NUTRITION MIX IN A HEALTHY INDIAN POPULATION

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Sir,

Micronutrient deficiency, commonly referred to as "hidden hunger," continues to pose a significant global public health challenge. According to the World Health Organization (WHO), more than two billion people suffer from deficiencies in micronutrients such as vitamin A, iron, iodine, and zinc [1]. In India, surveys indicate persistently high levels of iron-deficiency anaemia, vitamin B12 and D insufficiency across adolescent and adult populations [2]. While national programs aim to address these issues, gaps persist in compliance, accessibility, and product acceptability. In this context, I wish to bring to your attention recent findings from a clinical study evaluating *Good Monk*®, a novel, food-compatible nutrition mix formulated to bridge these nutritional gaps.

This prospective, single-arm clinical study (CTRI/2023/06/054557) assessed the impact of *Good Monk*® on gut health, micronutrient status, immune markers, energy levels, and general well-being among 72 healthy participants aged 13 to 35 years. Each subject consumed two sachets daily (totaling 4.6 g/day) over 120 days. The supplement contains a unique blend of highly bioavailable micronutrients (vitamins A, B6, B9, B12, C, D, iron, zinc), lysine, probiotics (130 crore CFUs), prebiotic fiber, and traditional Ayurvedic herbs—Ashwagandha (*Withania somnifera*) and Brahmi (*Bacopa monnieri*). The formulation is tasteless and odorless, allowing for seamless integration into routine meals such as dal, vegetables, soups, and milk, promoting high compliance.

Gut Health and Gastrointestinal Function

At baseline, over 30% of participants reported symptoms of poor gut health, including constipation, bloating, or irregular stool patterns. By day 120, there was a 91.6% reduction in gastrointestinal symptom scores using a Global Assessment Scale ($p < 0.0001$), and 94% of participants reported normal stool types (Type 3 or 4) according to the Bristol Stool Scale. Notably, these improvements were consistent across gender and dietary subgroups (vegetarian vs. non-vegetarian).

The observed benefits can be attributed to the synbiotic action of the formulation. Prebiotic fibers foster the growth of beneficial gut bacteria, enhance stool consistency, and regulate bowel motility [3], while probiotics contribute to improved gut barrier function, microbial diversity, and immune modulation [4]. The study's data reinforce the

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pivotal role of gut microbiota in maintaining systemic health.

Energy and Physical Function

Physical stamina was evaluated using the 30-Second Chair Stand Test (30SCST), a validated measure of lower body strength and endurance. Participants demonstrated a significant improvement of 24.4% by day 120 ($p < 0.0001$), increasing from a mean of 13.36 to 16.63 repetitions. Male participants showed slightly greater improvement (28.5%) than females (21.8%), although both groups benefited significantly.

This outcome is consistent with prior findings that improved micronutrient status—particularly in iron and vitamin B12—directly enhances oxygen transport and energy metabolism [5]. The inclusion of Ashwagandha, which has demonstrated ergogenic effects in randomized trials, may also have contributed to enhanced endurance and reduced fatigue [6].

Micronutrient Repletion

Serum levels of vitamin D, B12, and iron significantly improved during the intervention, although individual values were not disclosed in the preliminary report. Importantly, no participants received additional supplementation beyond the study product. Considering the widespread prevalence of these deficiencies in Indian diets, particularly among vegetarians [7], the product's ability to normalize these markers is of public health relevance.

Immune Function and Inflammation

The study also observed favorable shifts in immune-related biomarkers. Immunoglobulin G (IgG) levels increased while C-reactive protein (CRP) levels decreased, indicating reduced systemic inflammation. Questionnaire-based assessments—such as the Immune Status Questionnaire (ISQ) and WHOQOL-BREF—reflected improved subjective well-being and reduced illness frequency. These effects may be attributed to the combined action of micronutrients, synbiotics, and Ayurvedic immunomodulators [8,9].

Safety and Adherence

All 72 participants completed the full 120-day protocol without major adverse events. The supplement was well-tolerated, and no dropouts occurred due to intolerance or gastrointestinal discomfort. The product's integration into familiar foods likely supported strong adherence, overcoming one of the major barriers in nutritional intervention programs [10].

Significance and Limitations

This study provides a valuable case study on how an integrative, food-compatible supplement can simultaneously address multiple nutritional and functional health outcomes. The formulation's design—leveraging modern clinical nutrition, probiotic science, and Ayurvedic phytotherapy—makes it particularly suitable for large-scale public health use in South Asia and similar regions.

Limitations include the absence of a placebo-controlled comparator arm and the relatively short follow-up. Nonetheless, the use of multiple validated tools and consistent intra-individual trends across biomarkers, physical tests, and subjective questionnaires lend credibility to the findings. To confirm causality and generalizability, future randomized, double-blind studies are warranted, with larger and more diverse population groups.

Conclusion

The *Good Monk*® study demonstrates how functional food-based solutions can effectively address the multifactorial challenges of modern nutrition and lifestyle health. Its design aligns with WHO's strategic emphasis on food system interventions for malnutrition [11]. The study highlights a scalable approach to improving gut function, energy, and immune resilience—critical priorities in the post-pandemic era.

We encourage future research and public-private collaborations to further validate and scale such formulations. Combining evidence-based supplementation with dietary traditions may be key to sustainable health promotion in diverse populations.

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Author CRediT Statement

Poorvi Athreya, Principal Investigator: Study participants' identification, recruitment, and assessments. **Sucharitha L,** Co-investigator. **Amarpreet Singh Anand:** Clinical study funding, investigational product (Good Monk) supply, study outcome review. **Isha Singh: Co-investigator. Dheeraj Deep:** Clinical study data management, clinical report writing. **Manjunath H.:** Clinical data analysis.

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