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Letter to the Editor

Ginseng Extract Improves the Sub-health Status in Young Population: An Observational Study

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In today's fast-paced society, an increasing number of people are dealing with inexplicable fatigue and facing an intermediate condition between health and disease, which is defined as sub-health status.[1] Ginseng Radix et Rhizoma (*Panax ginseng* C. A. Meyer), a historic Chinese herbal medicine, has long been used around the world as a traditional tonifying product for patients who suffer from deficiency syndromes such as feeling tired and inactive.[2] Increasing studies in the past few years have illustrated that its active ingredient ginsenosides can effectively relieve chronic fatigue, and protect the cardiovascular system and cerebral function, thus maintaining body homeostasis.[3–5]

Recently, a high-grade dietary ginseng supplement called Renshen Yuanqi (RSYQ) Drink has been launched by China Medico Corporation, Tianjin, China, which would theoretically tonify the primordial *qi*, replenish the *qi* of the spleen and lung, and tranquilize the mind, promoting harmonization of the entire body's *qi* and blood, leading to the natural elimination of the symptoms of sub-health. However, the efficacy and safety of RSYQ Drink are based exclusively on conventional theories and speculative hypotheses, which remain under-researched. Therefore, we plan to conduct a post-market, observational study to investigate the efficacy and safety of RSYQ Drink on sub-health status.

In this study, we used RSYQ Drink as a carrier to represent the potential value of ginseng tonics and thus we primarily designed an effective and convenient tracking scale, which could comprehensively reflect the subjects' physical function, work status, mental condition, and social skills, to evaluate the effect of high-quality ginseng healthcare products in alleviating sub-health conditions.

To characterize the sub-health conditions of participants, a well-used questionnaire[6,7] consisting of 30 questions related to quality of life (QoL) with one additional question on adverse effects was used in this study. Participants answered each question with a score from 0 to 5 to indicate the extent of sub-health conditions (0 indicating no problem and 5 indicating severe condition). The questionnaire is depicted in Supplementary File 1.

To assess the improvement of sub-health conditions, we defined a decrease of ≥10 points from baseline as a dramatic improvement; a decrease of ≥5 and <10 points from baseline as a moderate improvement; and a decrease of ≥1 and <5 points from baseline as a potential improvement.

On a voluntary basis, 23 participants, mainly consisting of college students, postgraduates, and doctoral candidates who had been suffering greatly from the pressures of study and scientific research were recruited. All participants strictly followed the instruction and took RSYQ Drink for 30 days (taking 3g ginseng per day). The variance of their sub-health scores was analyzed at baseline and 30 days afterward. The study flowchart is summarized in Figure 1.

Among 23 participants that met the inclusion criteria, 20 finished the research and three dropped out due to concerns over the potential influence of the menstrual period. Of the 20 participants who finished the research, 17/20 (85%) achieved improvements in sub-health scores after taking RSYQ Drink, while 3/20 (15%) showed no signs of improvement. The average decrease in sub-health scores in the improvement group was 8 points. Specifically, 6/17 (35.3%) achieved an over-10-point decrease in sub-health scores; 6/17 (35.3%) achieved a 5-to-9-point decrease in sub-health scores; and 5/17 (29.4%) achieved a 1-to-4-point decrease in sub-health scores. Notably, 3 female participants observed no improvements in sub-health scores. We deliberated that it might be due to their higher baseline sub-health scores. The results are shown in Figure 2.

We also analyzed the aspects of sub-health conditions that were more significantly improved, the results of which included the following six aspects: 1) Feeling sad and depressed; 2) an inability to derive fun and feelings of achievement from work or study, causing it to become a burden; 3) Often feeling tired and needing rest, but finding it difficult to recover; 4) A constant feeling of cold hands and feet; 5) An inability to remember ideas that were strongly contemplated the previous evening; 6) Feeling upset and finding it difficult to cope when very busy with work and life. It is interesting that most of these are associated with the ability to overcome difficulties in work or study, indicating that RSYQ Drink may help increase a person's capacity for work. What's more, the improvement of productivity by ginseng has been well reported and investigated in vivo.[8]

However, previous studies have reported a number of side effects of ginseng. For instance, high doses of ginseng can harm the nervous and adrenal systems and may reduce medication effectiveness when consumed with calcium channel blockers, chemotherapy, and certain antidepressants.[9,10] In our experiment, we also

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Abbreviations: RSYQ Drink, Renshen Yuanqi Drink; QoL, quality of life.
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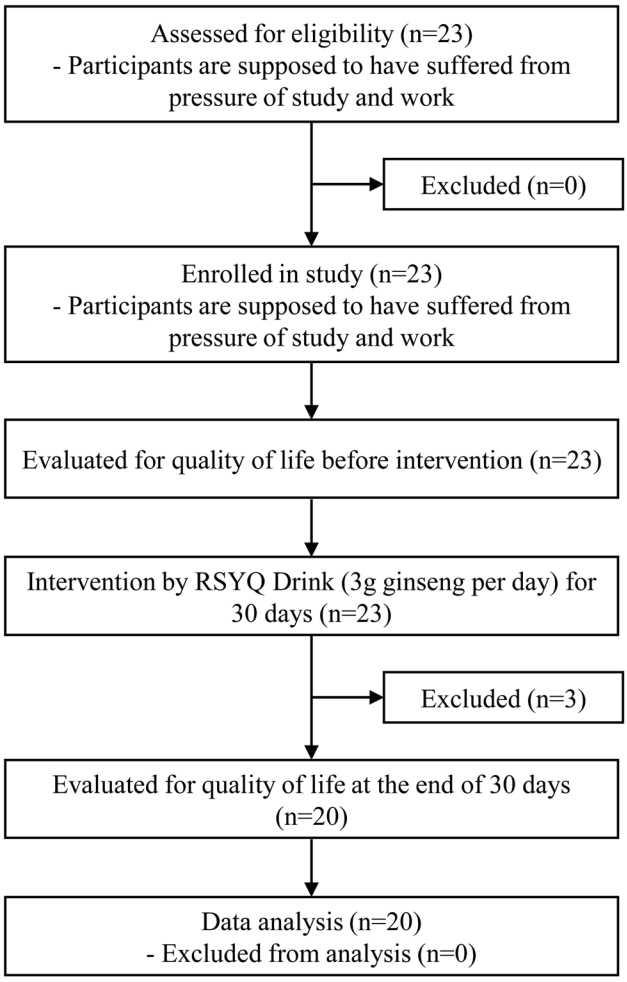

Fig. 1. The study flowchart. RSYQ Drink, Renshen Yuanqi drink.

observed several adverse effects, including constipation (1/20), tongue numbness (1/20), and head pain accompanied by a feeling of swelling (1/20). According to one participant's self-reporting, head pain accompanied by a feeling of swelling was concurrent with the treatment of minoxidil for hair loss and disappeared upon cessation of the minoxidil treatment. Given that minoxidil has a vasodilating effect and small doses of ginsenoside can lower central and peripheral arterial pressures in healthy adults,[11] we presume that the simultaneous use of the two agents may have caused excessive vasodilation, thus leading to the headache. Regarding the case of constipation, it was likely related to the participant's irregular and unhealthy diet during the experiment. Moreover, the participant with tongue numbness was reported to suffer from long-term cervical discomfort, which would lead to the compression of nerves. In all, although the above-mentioned adverse effects were generally mild and disappeared after several days, we suggest that they should be further monitored in subsequent research and should be included as warnings in the product dosage instructions.

P. ginseng has traditionally been thought to have vitality-enhancing properties and has been widely used as a dietary supplement. Previous studies have demonstrated that its major component, ginsenosides, can relieve chronic fatigue and ameliorate sub-health conditions.[12] However, the efficiency and safety of

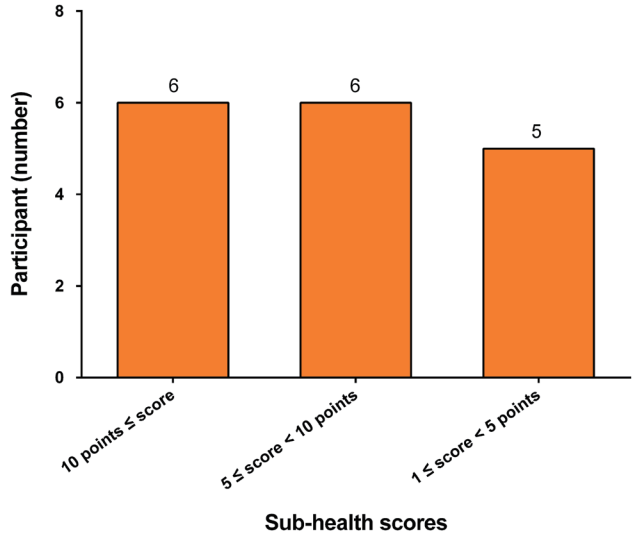

Fig. 2. The constitution of participants in the improvement group.

ginseng supplements are still unclear. In this study, we have preliminarily demonstrated the positive effect of ginseng extract on improving sub-health conditions with no serious side-effect observed in the young population, suggesting that dietary ginseng supplements might be a promising strategy for the prevention and regulation of sub-health.

Nevertheless, our research has some limitations. First, the questionnaire used to assess sub-health status was based mainly on subjective feelings as opposed to objective indices. Second, the number of participants recruited was too low for statistical analysis. The distribution of participants' age in our study was mainly concentrated between 20 to 40 years old, leading to an uncomprehensive observation. The sub-health-improving effects of ginseng on the elderly represent a much more attractive topic for investigation in the future.

Moreover, our research has shown that the prospect for future development of ginseng tonics is optimistic, and the experiment model may yield certain implications for future studies on dietary supplements. In future studies, we will further optimize the sub-health status scale to better highlight the effect of ginseng healthcare products and expand the trial to include more participants, especially seniors, to present higher-quality evidence.

Supporting information

Supplementary material for this article is available at https://doi.org/10.14218/FIM.2023.00004.

Supplementary File 1. The questionnaire of sub-health conditions.

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Conflict of interest

Two of the authors, Jiabo Wang and Yuan Gao, are editorial members of *Future Integrative Medicine*. The authors have no other conflict of interests to note.

Author contributions

Study concept and design (YG), analysis and interpretation of data (HYM), drafting of the manuscript (HYM), and critical revision of the manuscript for important intellectual content (JBW). All authors have contributed significantly to this study and approved the final manuscript.

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