

## Double-Blind Clinical Study of a Multivitamin and Polymineral Complex Associated with *Panax ginseng* Extract (Gerovital®)

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**Abstract:** The present study aimed to evaluate the efficacy of a multivitamin and poly minerals supplemented with *Panax ginseng* extract (Gerovital®) on patients suffering from common physical or mental stress. The study design was controlled, parallel and double blind. Patients were randomly divided in two groups and underwent a thorough clinical and laboratory examination. Group A received placebo capsules and group B received Gerovital® capsules. In both cases, two capsules were taken daily during meals for eight weeks. Mood as well as physical activity were evaluated through a questionnaire assessing quality of life. From the 126 patients enrolled, 12 patients (8 in group A and 4 in group B) were excluded due to voluntary withdrawal, 55 patients completed the study in group A and 59 in group B. The treatment with Gerovital® significantly increased the quality of life when compared to placebo. After 15 days of study no difference between groups was observed. However, at 30th, 45th and 60th day, group B showed a statistically significant increase in average score from 30.05 to 41.96, 47.01 and finally 50.81 points. No increase in body weight was detected in either group. No difference in blood pressure or heart rate was also observed between treatments. The present study has shown that the daily use of Gerovital® over a 2-month period can be effective in improving quality of life in patients suffering from physical and mental stress among individuals of different ages, ranging from adults to elderly. Moreover, its use has been associated to a lower incidence of flu-like seasonal respiratory illnesses. Finally, the incidence of undesired effects was similar to placebo.

**Keywords:** Panax ginseng, mood, sexual activity, vitamin, mineral.

### INTRODUCTION

The life in large cities raises a new necessity of improvement of quality of life. Factors as environmental pollution, shortness of resting time, fast-food, sedentary habits and increasing mental and physical fatigue takes to a situation of low level quality of life. The time we are living is known as “Stress Age”. Stress decreases physical and mental performance as well as the immune potential, inducing the progression of illness and latent disorders to become active. Therefore, the control and suppression of stress has been a very important issue related to quality of life [1].

To avoid such symptoms, the use of complementary and alternative medicine has been growing worldwide [2].

Several herbs and dietary supplements seem to have beneficial effects on depression, anxiety, insomnia and memory problems. Although most dietary supplements available seem to be safe, they are not risk free [3].

With the life expectation growing, undernutrition and chronic diseases became more usually [4]. Evidences links protein energy undernutrition or its markers with clinical outcomes in health care [5]. Norman *et al.* [6] have shown a relation between undernutrition and poor quality of life, in older people and cancer affected patients.

Vitamins and minerals are known to prevent and to correct cell metabolism, especially in situations of increasing demand. They have an important role in the metabolism of nervous cells, catalytic action in enzymes and radical scavenging effect in the cell [7]. The administration of a modest amount of vitamin and mineral supplementation improved the cognitive function in healthy individuals [8]. In another study, a combination of vitamin, mineral and *Panax ginseng* have shown a beneficial effect reducing functional

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fatigue using a quality of life questionnaire [9]. Moreover, the association of ginseng with vitamins and minerals, compared to vitamins and minerals only has proved to increase the quality of life [10].

The traditional Chinese medicine has relied upon *Panax ginseng* to restore and enhance well-being [11]. The active components of ginseng are a group of 30 different triterpene saponins, referred to as ginsenosides, in different portions among different species [12]. Moreover, in addition to active ginsenosides, it has been identified a acidic polysaccharide with immunostimulant activity, named “Ginsan” [13, 14]. Some adaptogenic effects of ginseng probably involve changes in tissue oxygen uptake and transitory alterations in carbohydrate and lipid metabolism [15]. An increased oxygen uptake and transport in elderly subjects as well as enhanced energy levels in athletes have been reported [16]. The ergogenic effects of ginseng are less clearly observed in non-stressed experimental animal or human subjects, compared with counterparts who were challenged with an intense physical activity [17].

Considering the reasons explained above, the present study aims to evaluate the efficacy of a multivitamin and polymineral formulation supplemented with *Panax ginseng* extract (Gerovital®) on patients suffering from mild to moderate physical and mental distress.

**PATIENTS AND METHODS**

In this study, 126 patients, aging between 30 to 60 years, were assigned to 8 physicians (groups of 15 patients each), to make 4 visits over a two month period. The patients were randomly, double-blinded in two groups to complete the assessment of the questionnaire. The patients enrolled were both male and female and known to be subjected to physical and mental stress and/or to present fatigue symptoms not related to any exclusion criteria. An informed written consent was obtained from each patient after a lecture about the study to make it clear to them, according to the Resolution 196/96 of the National Health Surveillance Agency – ANVISA.

The patients were randomly divided in two groups. The first group (group A) had received placebo capsules identical in form, color and taste to the ones of the active formulation. The second group (group B) had received Gerovital® capsules containing ginseng dried extract 100 mg; vitamin A (retinol) 2.000 U.I.; vitamin B1 1.30 mg; vitamin B2 1.30 mg; vitamin B6 0.50 mg; vitamin B12 4.00 mg; vitamin C 65.00 mg; vitamin D3 400 U.I.; vitamin E 10.00 mg; biotin 0.01 mg; nicotinamide 13.00 mg; D-panthenol 5.00 mg; rutin 10.00 mg; sodium fluoride 0.10 mg; calcium phosphate 30.00 mg; iron sulphate 10.00 mg; potassium iodide 0.15 mg; magnesium sulphate 6.00 mg; manganese sulphate 1.50 mg; potassium sulphate 5.00 mg.

Both treatments were provided by EMS Sigma Pharma, based in Hortolândia (SP, Brazil) and had the same characteristics. Two capsules were taken daily during meals, for an 8 weeks period. Mood as well as physical and sexual activity were rated by 10 questions on a scale 0 to 6. The ratings were analyzed and the average for each patient in both groups A and B was determined as the quality of life index [10].

At each physician visit, the level of quality of life was assessed by a questionnaire (Table 1) approved by the Ethical Committee for Human Research of The University of Alfenas, Alfenas, MG. This project was registered under number 682/99.

From the 126 patients enrolled, 12 patients (8 of group A and 4 of group B) were excluded due to non-compliance or to voluntary withdraw. Of the remaining patients, 55 were assigned to group A and 59 to group B.

The physiological parameters (pulse rate, blood pressure and clinical history) were assessed with relation to the demographic characteristics (Table 2) and they were found to be similar in the groups enrolled. Also, there were no significant intergroup differences for obesity, arterial hypertension, renal and liver diseases or diabetes mellitus. No worsening of these pathologies was detected during the study.

Adverse effects were recorded in the case report form and, if severe, were added to the discontinuation criteria,

**Table 1. Questionnaire Used to Evaluate Quality of Life. Each Item Contains four Options of Level**

Questionnaire for quality of life assessment	0	2	4	6
How do you feel?	Bad	Fair	Well	Great
How often do you feel painful or uncomfortable?	Frequently	Sometimes	Rarely	Never
How do you feel about your personal life?	Bad	Fair	Well	Great
Have often do you feel depressed or unhappy?	Frequently	Sometimes	Rarely	Never
How are you feeling about your relationship with family and friends?	Bad	Fair	Well	Great
How hard have been the tasks assigned in your work?	Very hard	Hard	Moderate	Not difficult
Do you feel good to participate in social and usual activities?	Bad	Fair	Well	Great
How much energy or vigor do you have?	Bad	Fair	Well	Great
In what degree are you happy with your sexual life?	Negative	Mild	Moderate	Excellent
How well do you sleep?	Bad	Fair	Well	Great

**Table 2. Demographic Characteristics of Study Population Expressed as Mean**

Variable	Group A (placebo)	Group B (Gerovital®)
Patients enrolled	63	63
Patients assessed	55	59
Age	44.8	42.6
Sex		
M	54% (n = 30)	54 % (n = 32)
F	46% (n = 25)	46 % (n = 27)
Weight (kg)	67.3	66.4
Height (cm)	168.4	162.8
Systolic blood pressure	121.7	119.2
Diastolic blood pressure	84.5	83.3
Heart rate	75	77
Quality of life	43.7	41.9

including pregnancy, interaction with others medications not allowed, as well as voluntary withdrawals or protocol violation.

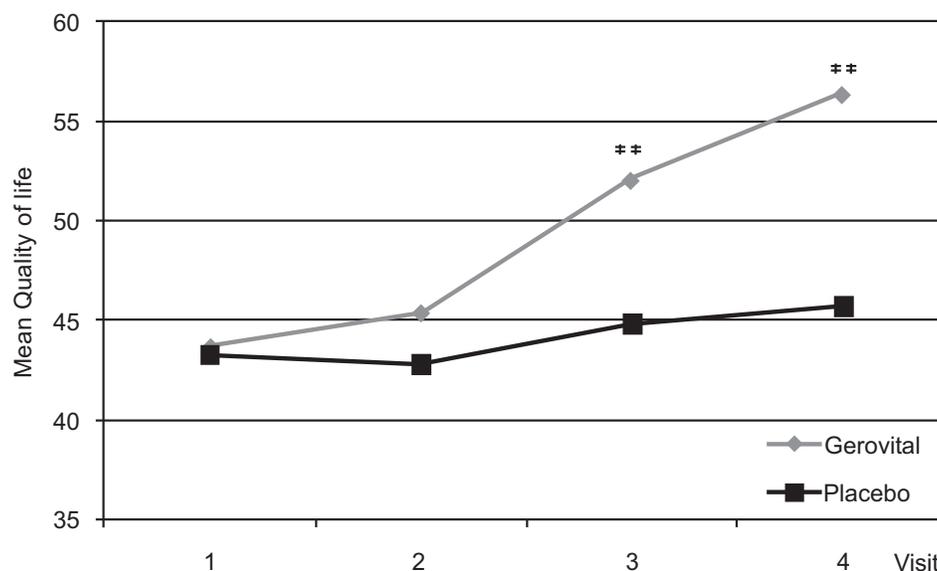
No increase in body weight was observed during Gerovital® therapy. No difference in blood pressure or heart rate was also detected between the treatments.

### Statistical Analysis

The intergroup differences were performed by covariance analysis, and intergroup differences of secondary effects were assessed by Fisher's exact test [10].

### RESULTS

The average quality of life score found for either group was plotted in Fig. (1). The treatment with Gerovital® increased the quality of life compared to placebo treatment.



**Fig. (1).** Mean quality of life index observed at each physicians visit. \* $P < 0.05$ , \*\* $P < 0.01$ .

After 15 days of study, in visit 1, no difference between the treatments was observed. Visits 2, 3 and 4 showed an increase in group B average scoring from 30.05 to 41.96, 47.01 and 50.81 points, respectively. Comparing visit 3 to visit 1, the quality of life assessed in patients of group B increased significantly (Table 3). In visit 4, the same effects were maintained. The statistical comparison found that every item the group treated with Gerovital® had been better than with placebo (Table 4).

Adverse effects reported for Gerovital® were some mild complaints of gastric irritation, nausea and headache. However, a similar incidence and severity of these undesired events was observed in the placebo group. All cases reported were considered of mild severity.

On the other hand, 5 patients from group B reported an increase of libido against none in group A. In addition, one case of flu was detected in group B (Gerovital®) against five

Table 3. Side Effects Observed

Side Effect	Group A (Placebo n= 55) Number of patients and %	Group B (Gerovital® n= 59) Number of patients and %	p-value
Increased libido	0 (0.0 %)	5 (8.5%)	p<0.001
Cases of Flu	5 (9.1%)	1 (1.7%)	p<0.01
Gastric irritation	4 (7.3%)	6 (10.2%)	n.s.
Headache	4 (7.3%)	5 (8.5%)	n.s

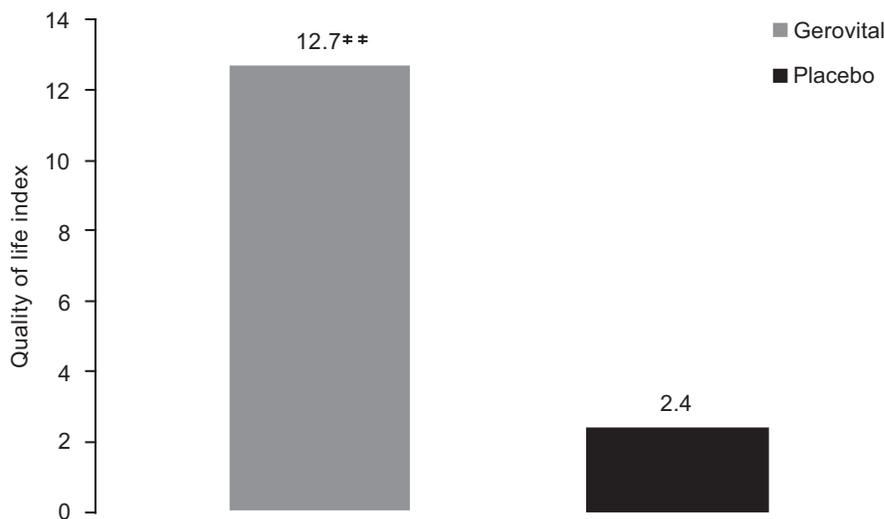


Fig. (2). Mean changes in quality of life index from visit 1 to 4. \*P<0.05, \*\*P<0.01.

cases observed in group A, which could be due to the immune modulatory effect attributed to *Panax ginseng* [13, 14].

**DISCUSSION**

The evaluation of quality of life in patients suffering from physical and/or mental stress is difficult due to personal

and professional. Vitamins and minerals have widely been used against stress [3, 8].

The root of *Panax ginseng* has been used for its several therapeutic effects. It has been described as coadjuvant for counteracting tiredness, fatigue and mental stress [7, 10, 11]. In our study, Gerovital® enhanced quality of life over the placebo showing a statistically significant improvement of any among ten items comprised in the assessment

Table 4. Mean Ratings in each of the 10 Items of the Questionnaire in Groups Receiving Gerovital® Capsules or Placebo at Visit 1 and at Visit 4

Item	Gerovital®					Placebo				
	Base line	Visit 1	Visit 2	Visit 3	Visit 4	Base line	Visit 1	Visit 2	Visit 3	Visit 4
A	2.76	3.05	3.85*	4.63**	5.29**	2.94	3.12	3.16	3.20	3.25
B	2.87	3.32	4.09*	4.87**	5.34**	3.18	3.41	3.40	3.41	3.43
C	3.15	3.44	3.62	3.72	3.80*	3.65	3.68	3.71	3.78	3.84
D	3.54	3.91	4.78*	5.11**	5.28**	3.82	3.84	3.91	9.96	4.01
E	3.11	3.52	4.33*	4.91**	5.41**	3.49	3.58	3.66	3.73	3.81
F	3.23	4.07	4.88*	5.32**	5.63**	3.88	3.89	3.92	4.01	4.12
G	2.97	3.14	3.31	3.44	3.65	3.37	3.61	3.65	3.71	3.86
H	2.61	3.14	4.55*	5.17**	5.54**	2.97	3.22	3.33	3.39	3.34
I	2.74	3.23	4.46*	4.98**	5.48**	3.05	3.32	3.45	3.45	3.48
J	3.07	3.47	4.09*	4.86**	5.39**	3.29	3.55	3.60	3.70	3.91

Compared to baseline. \*P < 0.05; \*\*P < 0.01

questionnaire. Therefore, it can be concluded that the composition of Gerovital<sup>®</sup>, which includes multivitamins and polyminerals added to a Panax ginseng extract, increased the quality of life in treated patients. The finding that the group treated with Gerovital<sup>®</sup> did not present weight gain may be related with an effect of ginseng extract on catabolism of lipids and carbohydrates at cellular level [12].

It has been shown a beneficial effect of *Panax ginseng* on mental alertness and coordination of movements in a sedentary state [18, 19]. Wesnes *et al.* [7] concluded that the combination of *Panax ginseng* extract plus vitamins and minerals were effective in improving shift-work memory alterations, self-reported fatigue and self-rated calmness, reducing also other cognitive deficits associated to shift-work [7]. Furthermore, the beneficial effects of Gerovital<sup>®</sup> were correlated with a lower of incidence of accidental mild flu infections during treatment. No weight gain and increased physical activity were also observed in treated patients.

The present study has shown that the daily use of Gerovital<sup>®</sup>, taking two soft gelatin capsules daily with meals, has been proved to be effective in improving quality of life in patients suffering from physical and mental distress.

Moreover, its use has shown an undesired effects incidence similar to placebo among individuals of different ages, ranging from adults to elderly, in agreement with previous findings [17].

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