

CLINICAL TRIAL

Effect of Fuzheng (Supporting Vital Qi) Compound on Fatigue

John Pittman, et al

Abstract: A 60-day clinical case study on the therapeutic effect of Leucozepin® (LP), a natural Fuzheng (Supporting Vital Qi) compound, on fatigue was evaluated in 30 patients. The results showed that the LP compound was able to alleviate fatigue associated with cancer, anemia, leucopenia, HIV, MS, Lyme disease and other chronic diseases. Among the thirty cases, a reduction of fatigue was reported in 28 patients after taking LP, representing a significant effective rate of 93.4%. The therapeutic effect on the symptoms of poor appetite, nausea, vomiting and insomnia was also assessed, resulting in a total effective rate of 92%, 87.5% and 76.9% respectively. Of the 30 patients, 28 patients reported a much better quality of life after LP treatment. The results indicated that the LP compound had hematopoietic as well as immune-modulating functions.

METHODS & MATERIALS

Introduction

This was a 60-day non-randomized clinical study to assess the efficacy of LP on fatigue and patient's quality of life via clinical observation and questionnaires.

Supply

Leucozepin® (LP), a Fuzheng (Supporting Vital Qi) extract formula of traditional Chinese medicine, was provided by LIFEnhance, Inc. LP is a natural proprietary extract consisting of 15 carefully selected herbs. Ingredients include: Huang Qi (Radix Astragali), Ji Xue Teng (Radix et Caulis Jixueteng), Ling Zhi (Ganoderma Lucidum), Dang Shen (Radix Codonopsis Pilosulae), Dang Gui (Radix Angelicae Sinensis), Shu Di Huang (Radix Rehmanniae glutinosa Conquिताe), Huang Jing (Rhizoma Polygonati), Bu Gu Zhi (Fructus Psoraleae Corylifoliae), Nu Zhen Zi (Fructus Ligustri Lucidi), Bai Zhu (Rhizoma Atractylodis Macrocephalae), Fu Ling (Sclerotium Podiae Cocos), Gou Qi Zi (Fructus Lycii Chinensis), Chen Pi (Pericarpium Citri Reticulatae), Shi Hu (Herba Dendrobi) and Gan Cao (Radix Glycyrrhizae Uralensis). The supply included six boxes (10 packets/20 capsules per box) per patient for the duration of sixty days. Patients took two 500mg capsules after breakfast and one 20-gram packet of the powder in the evening.

Subjects

Thirty patients were selected based on the following criteria: Patients suffered from fatigue related with one or more of the following: poor nutrition intake, anemia or leucopenia, GI Disorder, and other severe diseases. Patients with the following situations were excluded: bleeding, diabetes with infection, allergy to any of the ingredients in the LP formula, pregnant or breast feeding.

Patient population

All 30 patients suffered from fatigue of varying degrees: 11 patients associated with cancer and/or cancer treatment, 5 patients associated with low RBC and anemia, 5 patients associated with low WBC, 2 patients associated with HIV and 3 patients associated with Lyme disease. The rest had fatigue related with other diseases such as GI disturbance, immune deficiency, diabetes, chronic sinusitis, multiple sclerosis, chronic bronchitis, yeast infection, uterine fibromyoma and multiple myeloma.

Procedures

Patients had to complete three mandatory office visits during the clinical study: initial (screen) visit, second visit after 30 days and third visit after 60 days. Patients were instructed to fill out three questionnaires, which constituted the partial efficacy analysis, during each visit.

The supply of LP was prescribed to the patient at the initial and 2nd visit.

Evaluation

The tools used for the evaluation were the Questionnaires for the patients and the Study Report Form recorded by the practitioners. The final evaluation was primarily based on the practitioner’s records. The Questionnaire was comprised of six statements in terms of fatigue, poor appetite, nausea/vomiting, insomnia, and quality of life. On a scale from 0 to 4, with 0 being the least true and 4 the most true, the patients were required to circle the number corresponding to severity. The Study Report Form was for the practitioner to record the patient’s progress based on his/her diagnosis.

Criterion of analysis

Symptom Improvement Analysis was based on the practitioner’s records on the Study Report Form and the Questionnaire--pre and post comparison on energy level, fatigue, poor appetite, nausea/vomiting, insomnia, overall quality of life, and/or blood test results (if available).

RESULTS

Effects on fatigue

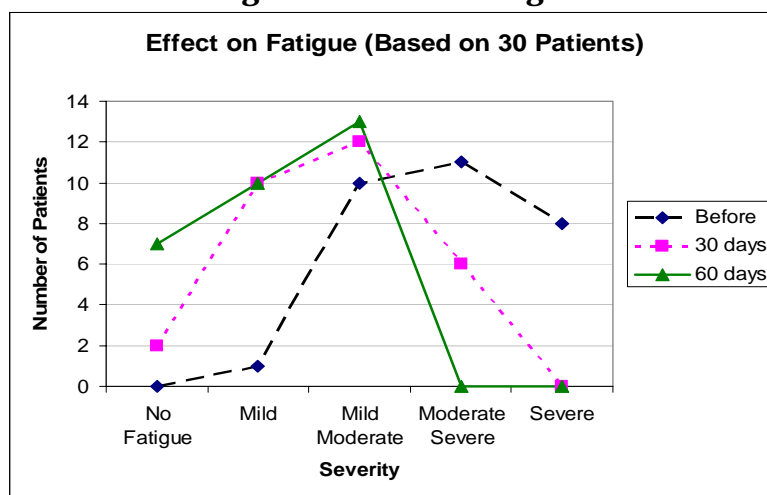
Reduction of fatigue can be seen from Table 1. Compared to 63.4% of patients with severe and moderate severe fatigue before taking LP, the percentage dropped to 20% in 30 days and 0% in 60 days, achieving a total response rate of 93.4% (see Tables 5.1 and 5.2). Figure 1 shows the shifting trend from the right “Severe fatigue” towards the left “No fatigue”.

Table 1: Comparison of Pre & Post LP Treatment in 30 Patients

	No Fatigue		Mild		Mild Moderate		Moderate Severe		Severe	
	PT	%	PT	%	PT	%	PT	%	PT	%
Before taking LP			1	3.3%	10	33.3%	11	36.7%	8	26.7%
After 30 days	2	6.7%	10	33.3%	12	40.0%	6	20%		
After 60 days	7	23.3%	10	33.4%	13	43.3%				

* PT: Patients

Figure 1: Effect on Fatigue



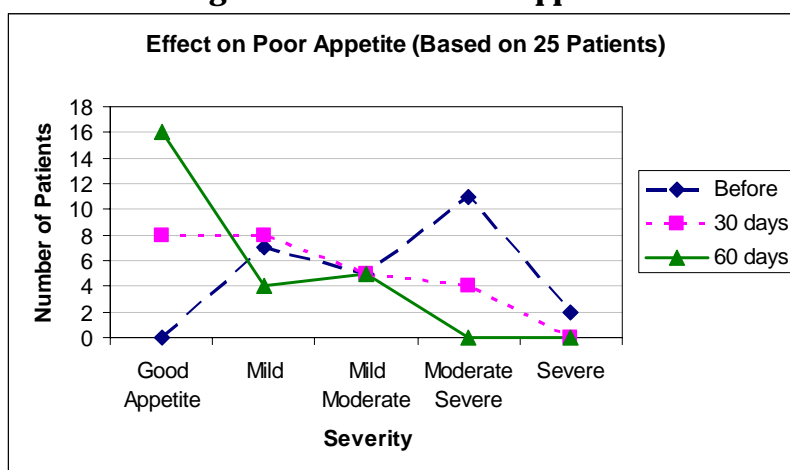
Effects on poor appetite

Table 2 shows the improvement of appetite in 36% of patients 30 days after taking LP. Significant improvement can be seen after 60 days with a total response rate of 92% (see Table 5.2). See Figure 2 for a visual representation of the change in patients' conditions. Before LP the majority of patients fell under Moderate Severe, shifting to Mild and Good Appetite after 30 days. There was a greater shift towards Good Appetite after 60 days.

Table 2: Comparison of Pre & Post LP Treatment in 25 Patients

	Good Appetite		Mild		Mild Moderate		Moderate Severe		Severe	
	PT	%	PT	%	PT	%	PT	%	PT	%
Before taking LP			7	28.0%	5	20.0%	11	44.0%	2	8.0%
After 30 days	8	32.0%	8	32.0%	5	20.0%	4	16.0%		
After 60 days	16	64.0%	4	16.0%	5	20.0%				

Figure 2: Effect on Poor Appetite



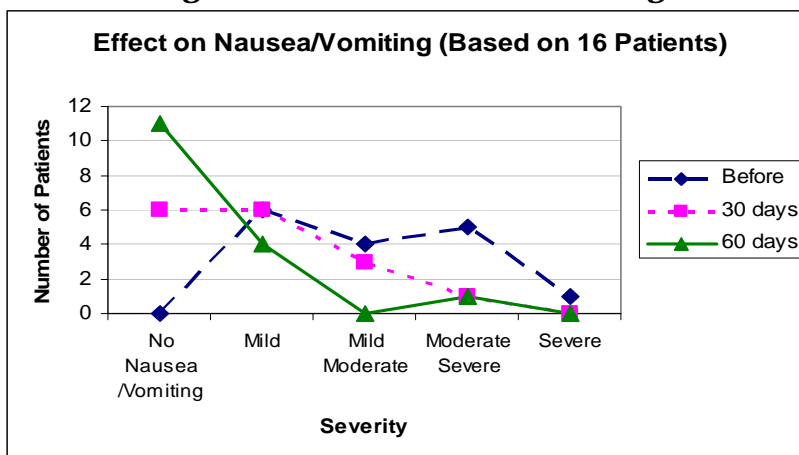
Effects on nausea and/or vomiting

Table 3 shows the detailed changes in the number of patients under each category. Before LP treatment there were 6 people, representing 37.5%, classified as having moderate severe and severe nausea and vomiting. 30 days afterwards the percentage dropped to 6.2% with a total response rate of 75% after 30 days. The rate increased to 87.5% after 60 days (See Table 5.1 and Table 5.2). Figure 3 shows a slight shifting trend after 30 days but a huge jump after 60 days towards the Y axis. The change after 60 days is significant with 68.8% of patients reporting “No Nausea and/ or Vomiting”.

Table 3: Comparison of Pre & Post LP Treatment in 16 Patients

	No Nausea /Vomiting		Mild		Mild Moderate		Moderate Severe		Severe	
	PT	%	PT	%	PT	%	PT	%	PT	%
Before taking LP			6	37.5%	4	25.0%	5	31.3%	1	6.2%
After 30 days	6	37.5%	6	37.5%	3	18.8%	1	6.2%		
After 60 days	11	68.8%	4	25.0%			1	6.2%		

Figure 3: Effect on Nausea/Vomiting



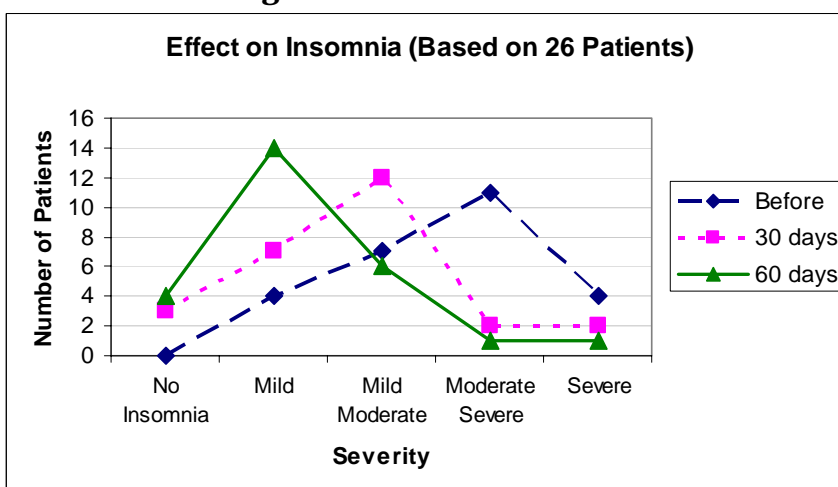
Effects on insomnia

Total response rate for insomnia was 65.4% after 30 days and 76.9% after 60 days (See Tables 5.1 and 5.2). Table 4 shows that compared to 57.7% of patients with Severe and Moderate Severe insomnia before taking LP, there were less than 8% remaining in that category after 60 days. Figure 4 shows the shifting trend from the majority experiencing Severe Insomnia to later experiencing No Insomnia.

Table 4: Comparison of Pre & Post LP Treatment in 26 Patients

	No Insomnia		Mild		Mild Moderate		Moderate Severe		Severe	
	PT	%	PT	%	PT	%	PT	%	PT	%
Before taking LP			4	15.4%	7	26.9%	11	42.3%	4	15.4%
After 30 days	3	11.5%	7	26.9%	12	46.2%	2	7.7%	2	7.7%
After 60 days	4	15.4%	14	53.8%	6	23.2%	1	3.8%	1	3.8%

Figure 4: Effect on Insomnia



Effect on blood cell counts

Recording the blood work depended on availability of these reports. Blood work pre and post treatment was collected from seven patients with low WBC and/or RBC induced by chemo-radiation therapy. Almost all of these patients reported that their quality of life improved after taking LP. LP helped in the recovery of blood cell counts, the maintenance of an adequate blood level and the reduction of the side effects from the treatment. The following table is a summary of the blood cell counts of the seven patients.

Table 5 Comparison of Blood Count Before & After Taking LP

	WBC (K/ μ l)		RBC (M/ μ l)	
	Before	After	Before	After
Patient #1	7.0	6.0	4.05	4.06
Patient #2	6.0	6.4	3.97	4.94
Patient #3	3.6	3.2	2.98	3.23
Patient #4	6.0	5.3	3.64	4.43
Patient #5	4.16	6.6	3.85	4.59
Patient #6	7.96	5.5	4.02	4.49
Patient #7	1.30	6.01	2.35	3.69

Note: All seven patients were undergoing chemotherapy at the time. RBC counts increased after LP. Four out of seven patients had decreased WBC counts but three of them remained in the normal range.

Effect on quality of life

28 out of the total 30 patients expressed that their overall quality of life improved to varying degrees after taking LP. This improvement was a result of the alleviation of fatigue reported among 93.4% of the patients. It was also due to the reduction and/or disappearance of other symptoms: poor appetite, nausea, vomiting and insomnia.

Other effects

The immune modulating and anti-bacteria effects were also reported. One patient with immune deficiency did not suffer from any infections and her vaginal yeast infection disappeared completely during the LP treatment period. Another case worth mentioning was that of a patient who used to rely on antibiotics and was able to be off them while taking LP.

Total Effectiveness

1. Complete Response (CR): Greater than 60% disappearance of one or more targeted symptoms during treatment (changes in terms of improvement on the scales of the Questionnaires, at least 3 levels).
2. Excellent Response (ER): Greater than 40% decrease (changes in terms of improvement on the scales of the Questionnaires, at least 2 levels) in one or more targeted symptoms.
3. Good Response (GR): Greater than 20% decrease (changes in terms of improvement on the scales of the Questionnaires, at least 1 level) in one or more targeted symptoms.
4. No Response (NR): Either no changes or the changes were smaller than 20% in terms of improvement in one or more targeted symptoms.

Table 5.1 Rate of Response After 30 Days

	CR		ER		GR		NR		TER	
	PT	%	PT	%	PT	%	PT	%	PT	%
Fatigue 30 Cases	3	10%	4	13.3%	17	56.7%	6	20.0%	24	80.0%
Poor Appetite 25 Cases	3	12.0%	5	20.0%	11	44.0%	6	24.0%	19	76.0%
Nausea/vomiting 16 Cases	1	6.3%	3	18.7%	8	50.0%	4	25.0%	12	75.0%
Insomnia 26 Cases			7	26.9%	10	38.5%	9	34.6%	17	65.4%

Note: Total Effectiveness Rate (TER) = CR+ER+GR

Table 5.2 Rate of Response After 60 Days

	CR		ER		GR		NR		TER	
	PT	%	PT	%	PT	%	PT	%	PT	%
Fatigue 30 Cases	5	16.7%	9	30.0%	14	46.7%	2	6.6%	28	93.4%
Poor Appetite 25 Cases	8	32.0%	7	28.0%	8	32.0%	2	8.0%	23	92.0%
Nausea/vomiting 16 Cases	2	12.5%	7	43.7%	5	31.3%	2	12.5%	14	87.5%
Insomnia 26 Cases	2	7.7%	10	38.5%	8	30.8%	6	23.0%	20	76.9%

Note: Total Effectiveness Rate (TER) = CR+ER+GR

DISCUSSION AND CONCLUSION

Fuzheng is one of the eight commonly used therapies in Traditional Chinese Medicine (TCM) and has been used widely in China, Japan and other Asian countries for thousands of years. “Fu” means “strengthening or supporting”, “Zheng” means “Qi - vital force”. Previous clinical studies prove that the use of Fuzheng compound can strengthen/support the healthy energy (vital Qi) and protect the body from damage. The LP compound used in the study is an advanced Fuzheng extra formula. Its main function is to tonify Qi (Huang Qi, Dang Shen, Ling Zhi and Gan Cao), strengthen Spleen (Bai Zhu and Fu Ling), supplement Yin (Di Huang, Nu Zhen Zi, Gou Qi Zi) and nourish blood (Ji Xue Teng). The majority of the above herbs are rich in polysaccharides and saponins. Numerous studies show that their chemical constituents possess immunostimulating, leukocytogenic, hematopoietic, anti-bacterial and anti-cancer effects.

For instance, Huang Qi (*Astragalus membranaceus*), traditionally used as a tonic, has been shown to restore a damaged immune system. Specifically it is used for recovery after surgery, chemotherapy and radiation. Evidence also shows administration of *Astragalus* was associated with an obvious rise in white blood cell (WBC) counts in 115 patients with leucopenia ⁽⁵⁾. Nu Zhen Zi (*Ligustrum lucidum*) is a powerful immune enhancing herb as well. It is commonly used as the supportive treatment for patients with neutropenia due to chemotherapy and radiation treatment ⁽⁶⁾. Ling Zhi (*Ganoderma lucidum*), with mushroom polysaccharide, has immunostimulating, modulating and antitumor effects. Administration of Reishi mushroom has been reported to increase monocytes, macrophages and T-cells as well as production of cytokine, interleukin, tumor-necrosis-factor and interferon ⁽⁷⁾.

The primary purpose of this study was to evaluate the efficacy of LP in relieving fatigue and fatigue-related symptoms. The 30 patients were all diagnosed with varying degrees (mild, moderate to severe) associated with cancer, leucopenia, low RBC, anemia, Lyme and/or other chronic diseases. They received 60 days' LP treatment at the six clinics/centers. The results were recorded by comparing the pre and post LP treatments. Compared to pre-LP, noticeable improvement of fatigue was shown after 30 days of taking LP with a total response rate of 80% (refer to Table 5.1). The rate increased to 93.4% (refer to Table 5.2) after 60 days of LP. The efficacy of LP on fatigue was also proven from the changes in the blood cell counts among the cancer patients. These results suggest that LP may have hematopoietic, immunostimulating and leukocytogenic functions and ability to alleviate the suppression of bone marrow production as in the case of low WBC, RBC and anemia. Similarly, Zhang XQ et al ⁽⁸⁾, in a clinical study on treatment of chemo- or radiotherapy induced leucopenia with Fuzheng compound reported the normalization of white blood cell count in 37 cases. The improvement of the clinical symptoms such as poor appetite, nausea/vomiting and insomnia proves that LP has a holistic effect in enhancing the

patients' quality of life, which was similar to previous studies of Fuzheng therapy in Traditional Chinese Medicine. In summary, LP compound may naturally strengthen the immune system and modulate the hematopoiesis level. It can be an effective intervention for the side effects of cancer treatment such as chemotherapy-induced fatigue, nausea, vomiting and insomnia. LP may also help improve cancer treatment fulfillment rate. Despite the great results of the study, there are some limitations. Many factors could have affected the accuracy of the results. This was not a double blind clinical trial and the collection of blood work was optional. Therefore the results were primarily based on the patients' feelings and the practitioners' observations. Although seven cancer patients' blood work was collected, the sample size was too small to be conclusive. In addition, there could be other factors that might have skewed the results, such as the kind of medications the patients were taking while participating in the study. Initially the case study enrolled 33 patients. Three patients dropped. One quit the project after 20 days due to complications with irritable bowel syndrome (IBS). One case with Lyme disease quit due to complications with the treatment for Lyme disease. The other one stopped the treatment with LP because of other complications and a change of travel plans. The exact reasons are yet to be found.

To further assess the mechanism and efficacy of LP in a more controlled way, a collaboration between the manufacturer of LP and the M.D. Anderson Cancer Center has been formed. An application for a NIH grant for further research study on LP is under way. The goal of the study is to find out if there are any changes in Ki67, apoptosis (bcl-2, caspase-3), chemokines (interleukins: IL-2, IL-8). The specific aims are to: 1) determine the mechanisms of actions of Fuzheng compounds, 2) assess the efficacy of Fuzheng compounds in animal models, and 3) assess the efficacy of Fuzheng compounds in cancer patients by correlating patient clinical performance with blood chemistry including serum tumor biomarkers (CA125, CEA, PSA, AFP, CA19-9, VEGF) assays. The hypothesis is that Fuzheng compounds could improve the immune system, increase hematopoiesis level, reduce chemoradiotherapy-induced side effects as well as improve the efficacy of chemotherapy and radiation therapy for cancer.

REFERENCES

1. Lester packer, et al. (eds), Herbal and Traditional Medicine, New York, Marcel Dekker, 2004
2. John K, Chen & Tina T. Chen, Chinese Medical Herbology and Pharmacology, City of Industry, Art of Medicine Press, Inc., 2004
3. John Boik, Natural Compounds in Cancer Therapy, Princeton, Oregon Medical Press, LLC, 2001
4. Zee-Cheng RK, Shi-quan-da-bu-tan SQT. A potent Chinese biological response modifier in cancer immunotherapy, potentiation and detoxification of anticancer drugs, *Methods Find Exp Clinic Pharmacol*, 1992 Nov; 14(9):725-36
5. *Chinese Journal of Integrative Chinese and Western Medicine*, 1995 Aug.; 15(8):462-4
6. *Pharmacology and Applications of Chinese Herbs (Chinese)*, People's Publishing House, 1983
7. Sheng-Yuan Wang, et al, The anti-tumor effect of Gandoderma Lucidum is mediated by Cytokines released from activated macrophages and T lymphocyte, *International Journal of Cancer*, 1997 Mar17;70(6):699-705
8. Zhang XQ, Liu SJ, Pan XY, Clinical study on treatment of chemo-or radiotherapy induced leucopenia with fuzheng compound. *Chinese Journal of Integrated Traditional Medicine*, 1996; Jan; 16

About the Authors: The trial was completed by John Pittman, John Casey, Cathy Liu, Kaixun Liu, Shouhua Xia and Chaohui Zhang. John Pittman, M.D., is from Carolina Center for Integrative Medicine in Raleigh, NC. John Casey, M.D., C.C.N is from International Health & Beauty in New York. Cathy Liu, M.D. (China), L.Ac. is from AAA Acupuncture Clinic in Houston. Kaixun Liu, M.D. (China), L. Ac., is from Memorial Acupuncture Clinic in Houston. Shouhua Xia, Ph.D., L.Ac. is from Natural Therapies Center in Baton Rouge. Chaohui Zhang, M.D (China), O.M., L.Ac. is from LIFEnhance Alternative Medicine Clinic in Houston. Address correspondence to Chaohui Zhang at 11155 S. Main Street, Houston, TX 77025.