

**A CLINICAL STUDY OF HAELAN 851
CONCENTRATED NUTRITIONAL ORAL LIQUID
IN SUPPORTING HEALTHY ENERGY AND LOWERING TOXIC
EFFECTS OF RADIATION AND CHEMOTHERAPY ON CANCER PATIENTS**

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This clinical study was a joint effort of six hospitals and one medical school in China. It studies the benefits of nutritional supplementation for cancer patients receiving chemotherapy and radiotherapy treatments in these hospitals. The study included 318 cancer patients. Of the 318 patients, 239 received chemotherapy and 101 received radiation therapy.

The purpose of this clinical research was to determine if superior nutrition would improve the healthy energy and reduce the toxic effects of radiation and chemotherapy treatments on cancer patients. The study was performed between April and October, 1992. Haelan 851 nutritional oral liquids were given to the test groups of patients and a control group of patients was given "Zhen-Qi", a standard water soluble oral medical preparation.

Method of observation and general information:

1. Case Selection:

Cases were selected in accordance with the criteria established in the "Specifications of diagnosis and treatment of common carcinomas in China", which was established and adopted by the Anti-carcinoma Association of China as a result of cooperative efforts by its members. Patients were medically diagnosed for cancer and their condition was confirmed by operation, pathology, cytology or CT scanning. Patients with and without surgical operations were all chosen as observative objects.

2. Method of Nutritional Supplementation:

Three test groups were established. Two of the three test groups received Haelan 851 nutritional supplementation with basically the same oral nutritional product but with differences in the product preparation. The two nutritional product test groups were designated Groups A and B respectively, (the Haelan 851 Platinum and Golden Formula Groups). The third group was the control group (Group C). Dosage and administration. Test group: Haelan 851 Platinum Formula or Golden Formula nutritional oral liquid supplementation, 80 ml each, three times daily on an empty stomach. Child patients were given Haelan 851 Platinum Formula or Golden Formula nutritional oral liquid supplementation, 10 ml each three times daily. The Control group: 1 pack of Z.Q.S.P. each, mixed with boiled water, orally twice per day. During radiation or chemotherapy treatments, both groups were treated simultaneously. All traditional and western medicines, including health supporting and toxicity lowering remedies were ceased to be taken by these patients during the nutritional testing period.

3. Grouping according to analyzing and differentiating pathological conditions based on traditional Chinese medical science (TCMS) and evaluation criteria for curative effects:

(1) Grouping according to analyzing and differentiating pathological conditions: Deficiency of Qi (vital energy), deficiency of blood, deficiency of Yin (body fluid with irritability, thirst, constipation, etc. as symptoms) and deficiency of Yang. Each group might be met with each other (for details, see Appendix 1 on page 2).

Appendix 1 - Scheme of symptoms showing the deficiency of vital energy by Traditional Chinese Medical Science (TCMS) in oncology

<u>Group of Symptoms:</u>		<u>Visual Observations:</u>	<u>Before</u> <u>After</u>
Qi Deficiency	Cardinal Symptoms:	1) Fatigue in vitality and energy 2) Deficiency of Qi or lazy to talk 3) Spontaneous sweating	
	Tongue Condition:	4) Corpulent or indented tongue 5) Feeble pulse (weak, soft)	
Blood Deficiency	Cardinal Symptoms:	1) Pale looking 2) Amaurosis and vertigo when standing	
	Tongue Condition:	3) Pallid tongue and lips 4) Thready pulse	
Yin Deficiency	Cardinal Symptoms:	1) Burning sensation of five centers 2) Dryness of mouth and pharynx	
	Subordinated Symptoms:	3) Elevated "fire" in the afternoon 4) Constipation, short and reddish urine 5) Light sweat	
	Tongue Condition:	6) Red tongue, little or no fur 7) Rapid and thready pulse	
Yang Deficiency	Cardinal Symptoms:	1) Systemic or topical chill or cold extremities 2) Puffiness of face and feet	
	Subordinated Symptoms:	3) Urinate frequently during the night 4) Unformed stool, long and clear urine	
	Tongue Condition:	5) Pallid, corpulent tongue, moist fur. 6) Deep, slow, scarcely perceptible pulse	

Notes:

1. Inquiring by order, mark the positive number and fill in the column "Before or After Nutritional Supplementation"
2. Standards:
 - (1) Qi deficiency, should be 3 items positive;
 - (2) Blood deficiency, should be 3 items positive;
 - (3) Deficiency of Qi and blood at the same time, regarded as a deficiency of both Qi and blood
 - (4) Deficiency of Yin, should be 3 cardinal symptoms positive with 1 subordinate symptom positive
 - (5) When Qi deficiency and Yang deficiency present together, it is regarded as deficiency of both Qi and Yang
 - (6) Deficiency of Yang, should be 3 cardinal symptoms positive (the first symptom must be positive) and 1 subordinate symptom positive

- (7) When Yin deficiency and Yang deficiency are present together, it should be regarded as a deficiency of both Yin and Yang
- (2) Evaluation criteria of beneficial effect for groups:
1. Significant effect: 2 cardinal symptoms disappeared with 3 elevated
 2. Effect: 1 cardinal symptom disappeared with 2 alleviated.
 3. Void: don't reach the above standard

4. Index of objective detection:

- (1) Urine for routine, blood urea nitrogen (BUN), alanine transaminase (ALT).
- (2) White blood count (WBC), neutro-granulocyte count (N), blood platelet count (Pt), hemoglobin (Hb), reticuloerythrocyte count (RtC).
- (3) Total plasma protein (TPP), albumin (AIB(A)), globulin (Glo).
- (4) Lymphocyte transformation rate (LCT), immune-globulin G (IgG), immune-globulin M (IgM).
- (5) Electrocardiogram (EKG)

5. Method of observation:

A complete examination was given all of the observative objects before treatment, a case history was recorded by category classification, and nutritional profile testing procedures were performed and indexed on the monitoring procedures each week or before and after the nutritional supplementation. A complete reexamination and evaluation was carried out after the nutritional supplementation was completed.

6. General Information: (See Table 1 on Page 8)

As seen in Table 1, there were 239 total cases receiving chemotherapy treatments and 79 cases receiving radiation treatments. Of the chemotherapy group, 177 of the patients were given nutritional supplementaiton with Haelan 851 concentrated nutritional oral liquids, which produced a beneficial results effect in 61 cases. The control group had 79 cases, of which 62 of these cases received chemotherapy treatments and the other 17 cases received radiation treatments. The Haelan 851 nutritional supplementation formulas administered consisted of two type, Platinum (Group A) and Golden (Group B) formulas. Both of these fermented soybean protein beverages are essentially the same except for differences in the preparation. The Platinum formula was used for nutritional supplementation with 119 cases and the Golden formula was used in 120 cases.

The distribution of cancer in this group of patients is as much as 23 kinds. Commonly, they are:

Stomach	69 cases (chemotherapy)
esophagus	24 cases (chemotherapy 7 cases; radiotherapy 17 cases)
lung	51 cases (chemotherapy 48 cases; radiotherapy 3 cases)
nasopharynx	34 cases (chemotherapy 5 cases; radiotherapy 29 cases)
intestinal	30 cases (chemotherapy 25 cases; radiotherapy 5 case)
acute lymphemia	51 cases (chemotherapy 50 cases; radiotherapy 1 case)
acute granulocyaemia	12 cases (chemotherapy)

According to TCMS the group of deficiency of Qi and deficiency of both Qi and Blood are mostly seen, they are 43.9% and 26.73% respectively. Special observation has been given to the Platinum Formula Nutritionally supplemented group and the Control Group (Group C).

In child leukemia cases, as both groups were randomly distributed, their comparison is realistic. The variable factors in other groups are also reduced to a minimum.

Beneficial Effects

1. Relation between Traditional Chinese Medical Science (TCMS) groups and classifications for supporting healthy energy with lowering toxicity. (See Table 2 below)

Table 2 - Relationship between TCMS groups and supporting healthy energy with lowering toxicity

Groups:	<u>Significant Effect</u>			<u>Effect</u>			<u>Void</u>		
	<u>A</u>	<u>B</u>	<u>C</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>A</u>	<u>B</u>	<u>C</u>
Deficiency:									
Qi	18	13	0	26	22	8	3	5	16
Blood	2	4	0	13	18	3	0	1	12
Yin	14	7	0	7	8	3	0	0	12
Yang	1	3	0	3	2	3	0	0	1
Qi & Yin	0	0	0	1	2	0	1	1	0
Qi & Blood	<u>20</u>	<u>14</u>	<u>1</u>	<u>10</u>	<u>18</u>	<u>7</u>	<u>0</u>	<u>2</u>	<u>13</u>
Total	<u>55</u>	<u>41</u>	<u>1</u>	<u>60</u>	<u>70</u>	<u>24</u>	<u>4</u>	<u>9</u>	<u>54</u>

Table 2 shows the beneficial effects of Haelan 851 oral liquid nutritional supplementation on the patients in the various groups by TCMS as having "deficiency of healthy energy". The total effective rates of Group A, B and C are 96.68%, 92.49% and 31.64% respectively. The significant effective rates are 46.21%, 34.16% and 1.2% respectively. In TCMS all types except the cases of types Yang deficiency and both Qi and Ying deficiency are too few, the other 4 types are carried on rigid analysis. It points out that groups A, B, and C in types Qi deficiency, Blood deficiency, Ying deficiency and both Qi and Blood deficiency have very significant differences (all P values < 0.01), of which group A is the best, group C is the worst, and groups A and B are similar to each other.

2. Haelan 851 concentrated nutritional oral liquid improves the patient's living quality during radiation and chemotherapy. (see Table 3 on Page 9 for statistical data).

As shown in Table 7 on Page 13, during the course of radiation and chemotherapy treatments, the most frequent symptoms described by patients are as follows:

1. Decrease in appetite (57.98%)
2. Nausea and vomiting .(34.45%)
3. Hemorrhage
4. Diarrhea
5. Constipation
6. Stomatitis

After nutritional supplementation with Haelan 851 oral liquids the primary symptoms, such as the decrease of appetite, nausea and vomiting, etc., in Groups A and B are all subsided obviously. By rigid analysis, the primary symptoms of "decrease in appetite" and "nausea and vomiting", are

improved significantly for those receiving the Haelan 851 nutritional supplementation. As to alopecia and stomatitis, there was no improvement. "nausea" and "vomiting" symptoms, before and after treatment, in Group C are aggravated significantly ($P < 0.05$). This analysis points out that Haelan 851 nutritionally supplemented Groups A and B had better relief of some symptoms during radiation and chemotherapy therapy than that experienced in the Control Group (Group C).

Table 7 on Page 13 reflects the positive beneficial effects of Groups A and B receiving Haelan 851 nutritional supplementation for those undergoing radiation and chemotherapy treatments.

In the group that received nutritional supplementation with Haelan 851 Platinum Formula all 119 cases successfully completed the scheduled course of radiation and chemotherapy. In the group that received nutritional supplementation with Haelan 851 Golden Formula only one out of the 120 cases were transferred to surgical service for an operation. In the Control Group (Group C) 4 of 97 cases discontinued the scheduled radiation and chemotherapy. The discontinuation rate was 5.06%.

As a result of observation, except for a few patients having stomach discomfort, there were no other side effects observed from nutritional supplementation with Haelan 851 oral liquids.

Discussion

1. An investigation into the use of nutritional supplementation to improve and support the healthy energy and reduction of toxicity caused by chemotherapy and radiation therapy given to cancer patients is an important theme in the prevention and healing of carcinomas. Haelan 851 is a soybean protein nutritional oral liquid that contains vitamins, minerals and amino acids that are essential to the body. Pharmacodynamic experiments have shown that it is possible to strengthen the body's vitality and increase the immune system functions with superior nutrition. Through clinical observation of 239 cases (178 chemotherapy and 61 radiotherapy cases), the cancerous patients were nutritionally supplemented with two types of Haelan 851 oral liquids (Groups A & B) and with Z.Q.S.P (Control Group C). The results show that the gross effective rates of group A, B, and C are 96.63%, 92.4% and 31.64% respectively. Significantly effective rates are 46.21%, 34.16% and 1.26% respectively. According to the energy deficiency types, as classified by traditional Chinese Medicine science (TCMS) when we contrast the beneficial effects of nutritional supplementation given groups A, B and C, by rigid analysis, it indicates that the types of Qi deficiency, Blood deficiency, Yin deficiency and deficiency of both Qi and Yin, Group A has the best nutritional profile and Group C is the worst, with Group B being similar to Group A. Thus it illustrates that Haelan 851 Nutritional Supplementation possesses the ability to strengthen the spleen, nourishing the kidney, tonifying the Qi, enriching the blood, nourishing the Yin and moisten the dryness.

2. Effect of Haelan 851 on supporting healthy energy.

(1) Increasing the living quality of radiation and chemotherapy patients:

Clinical observations show, regardless if the patients took radiation or chemotherapy, if those patients received Haelan 851 nutritional supplementation, they all experience increases in their quality of life, and both Haelan 851 types of nutritional supplementation are better than the control group ($P < 0.05-0.01$).

(2) Improving the immune function of radiation and chemotherapy patients;

Results of clinical tests show that the Haelan 851 nutritionally supplemented Group (A) experienced partial increase in the contents of IgG and IgA for both radiation and chemotherapy patients, and most of them were within the normal range. IgM was only increased in child leukemia ($P < 0.05$). Haelan 851 Platinum Formula (Group A) experienced elevated lymphocyte transformation rates, while the Haelan 851 Golden (Group B) and the Control Group (Group C) do not have these effects, the difference is remarkable ($P < 0.01$).

(3) Effect of Haelan 851 nutritional supplementation in reducing toxicity.

1. Slowing the fall tendency of WBC and neutrogranulocytes during radiation and chemotherapy.

The nutritional profiles of the Haelan 851 nutritionally supplemented groups (Groups A and B) are much better than the Control Group (Group C).

2. Effect on increasing Hg and Pt in radiation and chemotherapy patients.

The Haelan 851 Platinum Formula nutritionally supplemented group (Group A) is the best of all groups but there is no obvious change in both types of radiotherapeutic patients. Hg and Pt was also increased in the Control Group (Group C), which is primarily related to blood transfusions in some of the patients in this Control Group.

3. Lessening clinical symptoms of radiation and chemotherapy.

Especially the symptoms of "loss of appetite" and "nausea and vomiting" are improved obviously. In the Control Group (Group C) the symptoms were not improved but on the other side were aggravated significantly ($P > 0.05$).

4. Increasing the completion rate of scheduled radiation and chemotherapy treatments:

Clinical results show that Haelan 851 nutritional supplementation has the effect of supporting the healthy energy and lowering toxicity. Thus, it provides the foundation to insure the completion of radiation and chemotherapy treatment courses successfully. Of 119 cases receiving Haelan 851 Platinum Formula nutritional supplementation, all completed their scheduled courses of treatments. Among 120 cases receiving the Haelan 851 Golden Formula nutritional supplementation, only one case was transferred to surgical service for operation. The discontinuation rate was 0.83%. While in the control group (Group C) there are 4 cases that had to be discontinued. The control Group's (Group C) discontinuation rate was 5.06%.

As mentioned above, Haelan 851 nutritional supplementation has the function of strengthening the spleen, tonifying Qi, nourishing Yin and enriching Blood. It has the functions of increasing the patient's living quality, improving the condition of vital energy deficiency, strengthening the immune function, slowing the fall tendency of white blood cells and neutrogranulocytes, increasing Hg and Pt, improving appetite, alleviating the gastrointestinal reaction, increasing the completion of scheduled radiation and chemotherapy treatment courses by means of supporting healthy energy and lowering toxicity. This it alters the routine treatment in the past administration with blood plasma, albumin, interferon etc. during the course of radiation and chemotherapy. Therefore, to extend the clinical use of Haelan 851 nutritional supplementation has both distinct economic and social benefits.

Results of typical Cases

Case 1. Ma Shi Qiang, boy, 8 years of age, was admitted on March 10, 1992 (Hospital No. 108668) on account of repeated fever, pale looking accompanied with osteoarticular pain for more than 1 month. P.E: Clear consciousness, anemic appearance, scattered petechiae over the skin, the superficial lymph-nodes were enlarged as broad beam, slight tenderness over sternum, heart and lung (-), liver was 3 cm below right costal margin, spleen was felt 2 cm below left coastal margin, NS (-). Laboratory findings: Hb 60g/L, WBC $25 \times 10^9/L$, segmented neutrophils 2%, lymphocytes 88%, juveniles 10%, thrombocytes $20 \times 10^9/L$. Bone marrow showed acute lymphemia, belongs to the type of deficiency of both Qi and Blood. Apply plan DOAP for treatment, appetite was lowered obviously with nausea and vomiting, Motilium was given orally and Paspertin intramuscularly, however both were useless, the first course of chemotherapy had to be discontinued on the sixth day, and could not go on to the schedule second course. After giving the patient Haelan 851 nutritional supplementation the nausea and vomiting was greatly improved (grade II to I to 0), chemotherapy was continued successfully. One month later, lymph-node (-), liver spleen (-), patient's condition improved, up and out of bed. Living quality improved 50 to 60 points, body weight was 1 kg heavier, Hb 66 to 77g/L, WBC 2.0 to $3.8 \times 10^9/L$, neutrogranulocytes 4 to 35%, thrombocytes 45 to $90 \times 10^9/L$, IgG 2.8 to 1.92g/L, IgA 0.2 to 0.32g/L, IgM 3.63 to 4.5g/L. The following course of chemotherapy was administered after the sick child asked for Haelan 851 nutritional supplementation to go along with his treatment.

Case 2. Hong xx, male, 29 years old, (Hospital No. 155552), loss of strength in extremities, ptosis for last 5 months, patient was transferred from a district hospital on March 4, 1992. Chest film and EKG normal, CT showed thymoma. Operation was performed on March 13, 1992. Pathological diagnosis after operation was lipothymoma. Patient was discharged in March 31st. EKG: liver and kidney function normal. Radiotherapy was started from May 18th, body weight before treatment was 60 kg, appetite poor (Grade I), Hb 14.9, WBC 4037, N 61%, BPC 0.178 million, IgG 10.2, II.22, gA 2.60, IgM reticuloerthrocytes 0.3% CO^{60} radiation for 24 days, 300 roentgen each, stayed in hostel. Haelan 851 nutritional supplementation was administered orally, 80 ml three times daily. There was no radiation reaction after a course of radiotherapy. Hunger feeling after administration, took 6 meals per day, body weight increased form 60 kg to 65 kg. Blood for routine was normal, repeat examinations of the functions of heart, kidney, liver were normal, IgG 14.2, IgA 2.92, IgM 1.53 were elevated obviously before and after the therapy in contrast. No medications were administered during the radiotherapy.

Case 3. Liu X X, male, age; 47 was admitted on July 1, 1992. Patient was admitted 6 months after an operation for stomach cancer, and required a second course of chemotherapy. Patient had received a radical gastrectomy on January 27, 1992, the cut was healed finely. The pathological diagnosis: ulcerous cancer of stomach. Classification of type according to TCMS was a deficiency of Yin. After admission to the hospital, the patient was administered to with 5-Fu, MMC twice, poor appetite, tired and loss of strength, dryness of mouth was apparent. Examination: GPT > 200_u, 6 chemotherapy treatments were administered to the patient again and no adverse reactions could be seen from the chemotherapy treatments and the chemotherapy treatments were completed successfully. Conclusion of the value of Haelan 851 supplemental nutritional benefits : Remarkable results.

Table 1 - General Information

	Groups:	Radiotherapy			Total	Chemotherapy						Total
						Child leukemia			Adult carcinoma			
		A	B	C		A	B	C	A	B	C	
	No. of Case	34	27	17	79	15	26	15	70	67	47	239
Sex	Male	29	20	8	57	9	19	8	45	47	32	160
	Female	5	8	9	22	6	7	7	25	20	14	79
	Age	48.10 + or - 14.46	47.63 + or - 15.96	45.47 + or - 14.57		7.60 + or - 2.87	8.46 + or - 2.73	7.93 + or - 2.96	59.93 + or - 14.23	55.19 + or - 11.55	54.89 + or - 11.36	
Ca Distrib- ution	Type Dose		C				B			A		
	Head & Face		11				16			18		
	Neck		1				4			2		
	Chest		19				18			29		
	Abdomen		27				54			48		
	Others		21				28			22		
Operat- ion	No	28	20	9	57	15	26	15	27	25	17	125
	Yes	6	8	8	22	0	0	0	43	42	29	114
Course (Week)	Less than 4	0	1	0	1	0	0	0	0	13	1	14
	4 or more	8	16	17	41	15	26	15	18	11	18	103
	6 or more	14	11	0	25	0	0	0	6	7	2	15
	8 or more	12	0	0	12	0	0	0	46	36	25	107
Group- ing accord- ing to TCMS	Qi- deficiency	21	13	5	39	0	0	0	26	27	19	72
	Blood- deficiency	3	12	2	17	0	0	0	12	11	13	36
	Yin- deficiency	6	2	9	17	0	0	0	15	13	6	22
	Yang- deficiency	0	0	1	1	1	5	3	3	0	0	12
	Deficiency of Qi & Yin	0	0	0	0	0	0	0	2	3	0	5
	Deficiency of Qi & Blood	4	0	0	4	14	21	12	12	13	9	81

Note: TCMS = Traditional Chinese Medicine Science

**Table 3 - Analysis of Improvement In The Patients' Quality Of Life
For Those With Haelan 851 Nutritional Supplementation (Groups A & B)
As Compared to the Control Group (Group C)**

	Radiotherapy			Chemotherapy					
				Child leukemia			Adult carcinoma		
	N	Before treatment	After treatment	N	Before treatment	After treatment	N	Before treatment	After treatment
$\frac{A}{X \pm S}$	34	75.35 + or - 12.82	81.24 + or - 10.59**	15	78.66 + or - 12.46	85.33 + or - 10.60**	70	77.57 + or - 11.32	87.57 + or - 8.54**
$\frac{B}{X \pm S}$	27	76.67 + or - 7.84	78.89 + or - 8.47	26	78.85 + or - 9.52	84.23 + or - 7.58**	67	69.19 + or - 14.96	78.73 + or - 8.54**
$\frac{C}{X \pm S}$	17	75.88 + or - 10.04	75.06 + or - 10.37	15	79.33 + or - 15.79	80.67 + or - 16.24	47	77.13 + or - 11.42	76.17 + or - 13.11
$\frac{A}{d} \cdot \frac{B}{d}$		5.3** : -1.17			6.6* : 1.33			10** : -0.32	
$\frac{B}{d} \cdot \frac{C}{d}$		2.2* : -1.17			5.4* : 1.33			9.3** : -0.32	

Contrast before Nutritional Supplementation to after Nutritional Supplementation

*P < 0.05 and ** < 0.01

As Table 3 shows, Nutritional Supplementation with Haelan 851 Concentrated Oral Liquid, improved the quality of life for all patients, regardless of whether they were receiving chemotherapy or radiation therapy. Both Haelan 851 Platinum Formula and Golden Formula nutritionally supplemented Groups A and B exhibit improvement. Their differences are significant or very significant. (P < 0.05 - 0.01), while in Group C (the Control Group) there was no improvement (P > 0.05). At the same time, the average value of the differences in contrast between Groups A or B and C, shows that Group A and B are better than Group C (P < 0.05 - 0.01).

Table 4 - Nutritional Profiles Of Patient's WBC Counts For Those With and Without Nutritional Supplementation With Haelan 851 Oral Liquid (WBC= White Blood Cells)

			Radiotherapy			Chemotherapy					
			N	Before treatment	After treatment	N	Child leukemia		N	Adult carcinoma	
							Before treatment	After treatment		Before treatment	After treatment
WBC (10 ⁹ per Liter, X +or- S)	A	X±S	34	6.93 + or - 3.10	5.98 +or - 1.41*	15	3.22 + or - 1.69	3.46 + or - 1.90*	70	6.25 + or - 1.94	6.23 + or - 1.41*
	B		27	7.05 + or - 3.34	5.98 + or - 1.49**	26	3.60 + or - 3.15	3.55 + or - 0.69**	67	5.85 + or - 2.08	5.74 + or - 1.67*
	C		17	6.41 + or - 1.90	4.72 + or - 0.94***	15	4.29 + or - 1.82	2.82 + or - 1.30**	47	5.71 + or - 1.74	4.42 + or - 1.15***
	A:C	(d):(d)		0.562** : -1.683			0.236*** : -1.846			-0.027*** : -1.829	
	B:C			-1.111* : -1.683			-0.092* : -1.846			-0.196** : -1.829	
	Hb (10 ⁹ per Liter, X +or- S)	A	X±S	34	4.33 + or - 1.48	4.08 + or - 1.01*	15	0.64 + or - 0.91	1.06 + or - 1.05**	70	4.08 + or - 1.42
B	27	4.61 + or - 2.99		4.20 + or - 1.12*	26	0.95 + or - 1.04	1.20 + or - 0.50*	67	3.53 + or - 1.19	3.45 + or - 1.26*	
C	17	4.23 + or - 1.57		3.88 + or - 0.74**	15	1.33 + or - 1.31	0.56 + or - 0.31**	47	3.73 + or - 1.10	2.83 + or - 2.13***	
A:B	(d):(d)		0.278* : -0.805			0.178*** : -0.714			0.15*** : -1.074		
B:C			-0.399 : -0.805			0.25** : -0.784			-0.19** : -1.074		

Contrast before treatment to after or contrast with the values difference (d) of both types:
 ***P < 0.05 **P < 0.01 *P < 0.05

As Table 4 shows, the nutritional profiles of those chemotherapy and radiation patients who received Haelan 851 Oral liquid nutritional supplementation in Group A (Platinum Formula) had the least decrease in white blood cells (WBC), while Group C (Control Group) in both the radiation and chemotherapy divisions were all decreased. By comparing the before and after treatment results, the difference is very significant (all P value < 0.01). Similarly changes can be also seen in the numbers of patients in each category. These nutritional profiles indicate by both numbers of patients and degree of decrease in WBC, that the Haelan 851 nutritionally supplemented patients in Groups A and B are better than those in Group C.

Table 5 - Nutritional Profiles Of Chemotherapy and Radiation Patients' Hemoglobin (Hb) and Blood Platelet (Pt) Levels With and Without Haelan 851 Oral Liquid Nutritional Supplementation

			Radiotherapy			Chemotherapy					
			N	Before treatment	After treatment	Child leukemia			Adult carcinoma		
						N	Before treatment	After treatment	N	Before treatment	After treatment
Hb (g/L)	A	X±S	34	132.56 + or - 18.30	131.56 + or - 13.10	15	62.87 + or - 9.25	81.67 + or - 10.30**	70	108.13 + or - 15.34	116.17 + or - 13.01*
	B		27	116.89 + or - 16.42	124.41 + or - 13.01	26	67.73 + or - 15.98	83.12 + or - 10.75**	67	108.01 + or - 18.45	112.07 + or - 15.27
	C		17	121.18 + or - 18.88	111.35 + or - 18.19*	15	73.43 + or - 12.03	76.27 + or - 9.85	47	107.94 + or - 15.78	633.43 + or - 156.92**
Pt (10 ⁹ /L)	A	X±S	34	187.71 + or - 62.50	194.91 + or - 52.67	15	34.57 + or - 22.55	75.32 + or - 38.72**	55	158.45 + or - 81.60	160.71 + or - 100.66
	B		27	176.48 + or - 54.90	181.52 + or - 29.03	26	39.16 + or - 33.51	86.32 + or - 31.13**	67	134.72 + or - 68.15	139.96 + or - 64.91
	C		17	213.41 + or - 51.22	185.65 + or - 35.33	15	38.87 + or - 21.25	51.07 + or - 21.61	47	139.66 + or - 62.50	613.11 + or - 34.94**

Contrast before treatment with after: *P < 0.05, **P < 0.01

As demonstrated by Table 5, the nutritional profiles of those chemotherapy and radiation patients receiving Haelan 851 Platinum Formula (Group A) Oral Liquid nutritional supplementation exhibited higher or increased hemoglobin (Hb) levels. Also, part of the chemotherapy patients in Group B (child leukemia patients) who were nutritionally supplemented with Haelan 851 Golden Formula exhibited higher Hemoglobin (Hb) levels. The differences for the chemotherapy patients in Groups A and B are significant or very significant (P < 0.05-0.001), while in the radiation therapy group of patients the contrast of before and after treatment changes are not obvious. Increase in Blood Platelets (Pt) was only seen in the Haelan 851 nutritionally supplemented Groups A and B (child leukemia group). The Hb and Pt seems to be increased in group C, which may be a result of the fact that some of the patients in Group C required and received blood transfusions. None of the patients in Groups A or B required or received blood transfusions during the study. Table 5 shows that the nutritional profiles of those chemotherapy patients who received Haelan 851 nutritional supplementation (Groups A and B) had higher and/or increasing hemoglobin (Hb) and Blood Platelet (Pt) levels than the Control Group (Group C). These results were not evident for those patients receiving radiation therapy.

**Table 6 - Immune System Nutritional Profiles For Patients
Receiving Haelan 851 Oral liquid Nutritional Supplementaiton**

			Radiotherapy			Chemotherapy					
			N	Before treatment	After treatment	- Child leukemia			Adult carcinoma		
						N	Before treatment	After treatment	N	Before treatment	After treatment
IgG (g/L)	A	X±S	34	12.50 + or - 2.94	13.75 + or - 2.68*	15	10.65 + or - 4.76	11.97 + or - 2.15	70	11.20 + or - 3.16	12.22 + or - 2.76**
	B		27	14.90 + or - 5.63	15.94 + or - 4.25	26	8.36 + or - 3.24	9.29 + or - 2.87**	66	11.67 + or - 2.95	12.77 + or - 3.55**
	C		17	-15.45 + or - 2.67	14.35 + or - 1.71	15	9.38 + or - 2.73	9.14 + or - 2.47	47	11.22 + or - 3.30	11.76 + or - 3.82
IgA (g/L)	A	X±S	34	3.52 + or - 2.12	3.50 + or - 1.63	15	1.01 + or - 0.54	1.13 + or - 0.59	70	2.01 + or - 1.07	2.28 + or - 1.08**
	B		27	2.83 + or - 1.35	3.38 + or - 1.17*	26	0.80 + or - 0.56	0.97 + or - 0.70*	67	2.23 + or - 1.41	2.25 + or - 1.32
	C		17	3.72 + or - 1.42	3.62 + or - 1.01	15	0.96 + or - 0.55	0.84 + or - 0.41	47	1.83 + or - 0.63	1.79 + or - 0.57
IgM (g/L)	A	X±S	34	1.45 + or - 0.64	1.55 + or - 0.57	15	1.03 + or - 0.37	1.09 + or - 0.41	70	1.46 + or - 0.78	1.58 + or - 0.66
	B		27	1.79 + or - 0.68	1.83 + or - 0.36	26	1.14 + or - 0.56	1.18 + or - 0.37	67	1.60 + or - 1.31	1.60 + or - 1.32
	C		17	2.07 + or - 0.69	1.91 + or - 0.37	15	1.04 + or - 0.35	1.32 + or - 0.42*	47	1.49 + or - 0.62	1.51 + or - 0.47
LCT (%)	A	X±S							35	30.31 + or - 9.64	53.74 + or - 11.87**
	B								20	46.40 + or - 7.47	53.70 + or - 6.14
	C								20	51.00 + or - 7.79	47.75 + or - 10.0

Contrast before nutritional treatment with after: *P < 0.05 and **P < 0.01

As shown in Table 6, Cancer patients receiving radiation and chemotherapy along with Haelan 851 Oral Liquor Nutritional supplementation had superior nutritional profiles when measuring the increase of immune-globulin IgA and and IgG, and most of them are within the normal range. In contrast with all the radiation and chemotherapy groups "before" and "after" treatment, IgM is only increased in child leukemia group C (P < 0.05), and there are no changes in other groups. Haelan 851 Platinum Formula (Group A) also experienced elevated lymphocyte transformation rates from below normal to near normal level, while in Groups B and C the effects are void. The difference is very significant (P < 0.01).

Table 7 - Effects of Nutritional Supplementation With Haelan 851 Oral Liquids On Relief of Symptoms Associated With Radiation and Chemotherapy Patients

Group:		A			B			C		
		N	Before treatment	After treatment	N	Before treatment	After treatment	N	Before treatment	After treatment
Decrease in Appetite	0	119	50	103	120	36	77	79	46	23
	I		44	12		37	33		19	36
	II		16	3		32	7		12	17
	III		9	1		15	3		2	3
	%		57.98	13.45		70	35.83		41.77	70.88
Nausea and Vomiting	0		78	111		64	96		61	31
	I		19	6		30	21		9	33
	II		19	2		11	2		6	-12
	III		3	0		7	1		3	3
	%		34.45	6.72		40	20		22.78	60.75
Diarrhea	0		107	118		101	115		71	72
	I		8	0		9	5		4	6
	II		4	0		8	0		4	1
	III		0	1		2	0		0	0
	%		10.08	0.84		15.83	4.16		10.12	8.68
Constipation	0		118	118		114	110		69	65
	I		0	1		4	8		10	13
	II		1	0		2	2		0	1
	III		0	0		0	0		0	0
	%		0.84	0.84		5	8.33		12.65	17.72
Hair Loss	0		117	108		114	106		78	64
	I		2	8		5	8		1	6
	II		0	3		1	5		0	9
	III		0	0		0	1		0	0
	%		1.68	10.08		5	11.66		1.26	18.98
Hemorrhage	0		103	118		89	114		67	69
	I		13	1		19	5		12	9
	II		3	0		11	0		0	1
	III		0	0		0	0		0	0
	%		13.44	0.84		25	4.16		15.18	12.65
Stomatitis	0		119	118		114	115		78	70
	I		0	1		5	5		1	8
	II		0	0		1	0		0	1
	III		0	0		0	0		0	0
	%		0	0.84		5	4.16		1.26	11.39