

**Effect of Long-term Administration of Immunomodulatory Food
on Cancer Patients Completing Conventional Treatments**

Hiroshi TSUNEKAWA
Tsunekawa Gastrointestinal Clinic

Effect of Long-term Administration of Immunomodulatory Food on Cancer Patients Completing Conventional Treatments

Hiroshi TSUNEKAWA
Tsunekawa Gastrointestinal Clinic*

Summary

A study was conducted to investigate the effects of long-term administration of the immunomodulatory food BioBran, rice bran arabinoxylan derivative, on 16 cancer patients, mainly in stage IV with various conventional lesions, who had just undergone conventional cancer treatments, such as surgery, chemotherapy and radiotherapy. The main clinical observations were the safety and effect of BioBran on the nutritional state of the patients, who were exhausted due to treatment. During the administration period, no decreases in body weight and leukocyte count or significant changes in leukogram were observed. Rather, the leukocyte count increased. In addition, most patients showed an increase in NK cell activity and a remarkable decrease in tumor markers.

Key words: complementary medicine, rice bran arabinoxylan derivative, immunomodulatory food, safety

Introduction

In our clinic, complementary medicine is used in cancer patients who completed surgery, chemotherapy, and irradiation therapy to improve QOL, prevent recurrence, and enhance life prolongation. We call the medicine "Ryo-yo." "Ryo" means treatment given in the clinic to enhance healing and immunity, and "yo" means daily cares by the patients themselves to increase their self-

healing capacity. For daily care, patients are trained for breathing, diet, and physical and mental health¹⁾. The diet should be based on modern dietetics or grains and vegetables to enhance prophylactic power. Functional foods are also used as part of the diet therapy, but patients make the decision about ingestion. Many functional foods are used to prevent decreased immunity and to reduce adverse reactions in cancer treatment. All of our patients take 1-5 kinds of functional

Effect of Long-term Administration of Immunomodulatory Food on Cancer Patients Completing Conventional Treatments

Hiroshi TSUNEKAWA (Tsunekawa Gastrointestinal Clinic). *Clinical Pharmacology and Therapy*, Vol. 14 (3): PP. 295-302, 2004

* Tsunekawa Bldg., 1-22-13, Taiko, Nakamura-ku, Nagoya-shi, Aichi 102-0083

foods. Most of them contain ingredients equal or similar to those in foods taken every day. However, the form is concentrates and capsules, granules, or tablets of partially purified ingredients in most cases. Thus, there is a possibility of ingesting larger quantities of some ingredients than those contained in foods. As it is reported that excessive ingestion of β carotene promotes

lung cancer²⁾, sufficient attention should be paid to safety. In the present study, the effect of long-term administration of BioBran, most frequently used by our patients, was evaluated in 16 cancer patients with nutritional problems who had just completed conventional treatments, especially focusing on the effect on leukocytes.

Table 1 Backgrounds of subjects

Initials	Age	Sex	Primary lesion	Study period
K.O.	56	Male	Stomach	January to July 2001
I.R.	64	Male	Large intestine	March to September 2001
M.T.	59	Male	Large intestine	March to September 2001
K.K.	44	Female	Breast	February to August 2001
T.H.	58	Female	Rectum	May to November 2001
F.A.	46	Female	Breast	July 2001 to January 2002
T.S.	60	Female	Stomach	August 2001 to February 2002
K.H.	47	Female	Breast	December 2001 to June 2002
E.I.	44	Male	Biliary tract at hepatic portal	February to August 2002
H.Y.	59	Female	Large intestine	February to August 2002
H.M.	77	Female	Ovary	December 2001 to June 2002
M.N.	72	Female	Thyroid gland	January to July 2002
Y.I.	44	Male	Lung	October 2001 to April 2002
Y.H.	84	Male	Rectum	January to July 2002
N.A.	39	Female	Uterine cervix	March to September 2002
K.M.	53	Male	Rectum	April to October 2002

Table 2 Changes in body weight (kg)

Initials	Before study	After study	Difference
K.O.	70.0	71.0	+1.0
I.R.	67.0	69.0	+2.0
M.T.	61.0	60.0	-1.0
K.K.	48.0	49.0	+1.0
T.H.	53.0	53.0	0
F.A.	49.0	51.0	+2.0
T.S.	38.0	38.0	0
K.H.	52.5	53.0	+0.5
E.I.	47.0	46.5	-0.5
H.Y.	50.0	51.0	+1.0
H.M.	44.0	44.0	0
M.N.	46.5	47.0	+0.5
Y.I.	64.0	65.0	+1.0
Y.H.	59.0	60.0	+1.0
N.A.	45.0	46.5	+1.5
K.M.	68.0	68.0	0

Table 3 Changes in leukocyte count and subsets

Initials	Leukocyte count (/mm ³)			Neutrophil (%)			Lymphocyte (%)		
	Before administration	After administration	Difference	Before administration	After administration	Difference (%)	Before administration	After administration	Difference (%)
K.O.	5500	6500	+1000	65.7	76.2	+10.5	24.9	19.5	-3.4
I.R.	6100	4400	-1700	69.8	62.8	-7.0	24.1	27.6	+3.5
M.T.	3500	4100	+600	56.4	59.5	+3.1	27.2	31.2	+4.0
K.K.	3400	3600	+200	60.8	64.9	+4.1	22.7	21.3	-1.4
T.H.	5700	5400	+300	51.9	53.0	+1.1	42.0	42.5	+0.5
F.A.	2500	3000	+500	57.0	52.1	-4.9	24.5	42.5	+18.0
T.S.	3800	4200	+400	40.0	55.3	+15.3	56.0	35.9	-20.1
K.H.	4800	4400	-400	80.0	71.7	-8.3	11.0	20.6	+9.6
E.I.	2800	3400	+600	57.9	67.0	+9.1	25.6	23.8	-1.8
H.Y.	4200	5400	+1200	50.5	61.9	+11.4	33.7	27.2	-6.5
H.M.	3000	3500	+500	54.6	63.8	+9.2	30.3	29.9	-0.4
M.N.	7300	6000	-1300	68.9	62.2	-6.7	24.6	28.7	+4.1
Y.I.	3700	5600	+1900	71.7	82.0	+10.3	19.7	11.5	-8.2
Y.H.	5600	5800	+200	64.0	64.2	+0.2	25.2	23.5	+1.7
N.A.	5200	4300	-900	80.0	71.1	-8.9	13.5	14.2	+0.7
K.M.	5300	5900	+600	44.8	48.8	+4.0	35.7	23.6	-12.1

Table 4 Changes in leukocyte count and subsets from the normal ranges

	Leukocyte count		Neutrophil		Lymphocyte	
	Before administration	After administration	Before administration	After administration	Before administration	After administration
L	7	4	-	-	11	13
N	9	12	8	5	4	3
H	-	-	8	11	1	-

Table 5 Categorization of changes in leukocyte count and subsets

	Leukocyte count	Neutrophil	Lymphocyte
Increase	9	5	2
No change	4	5	10
Decrease	3	6	4

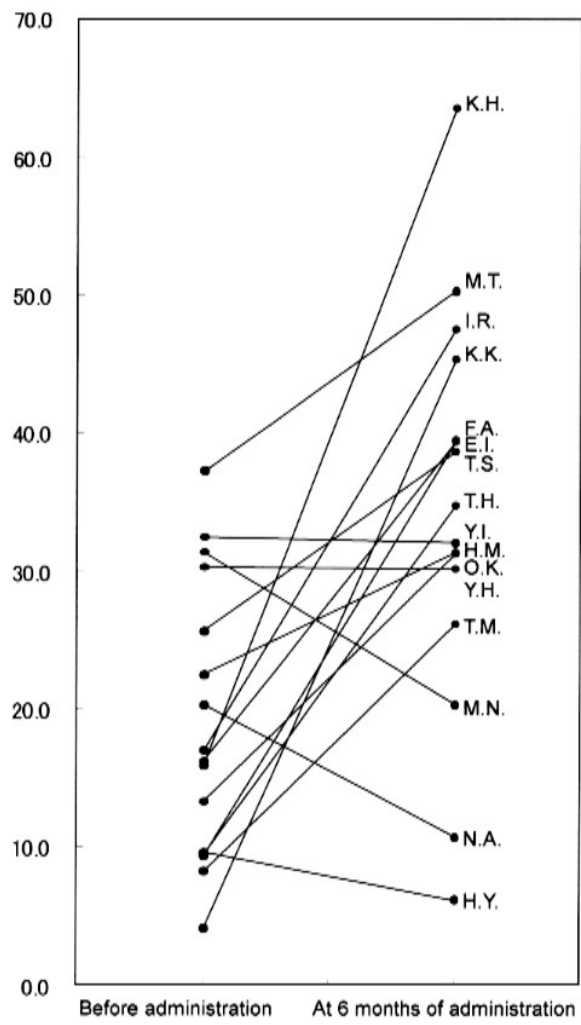


Figure 1 Changes in NK activity

Table 6 Changes in NK activity

Patient's initials	Before administration	At 6 months of administration
K.O.	13.3	31.2
I.R.	17.0	47.5
M.T.	37.2	50.3
K.K.	4.1	45.3
T.H.	9.5	34.8
F.A.	9.3	39.5
T.S.	25.6	38.6
K.H.	15.9	63.6
E.I.	16.2	39.4
H.Y.	9.6	6.1
H.M.	22.5	31.4
M.N.	31.4	20.3
Y.I.	32.4	32.0
Y.H.	30.3	30.2
N.A.	20.3	10.7
K.M.	8.2	26.2

Methods

1. Patients and study period

The subjects were 16 cancer patients who met the criteria (1) to (3) below, and the study period was 6 months.

Table 1 shows the age, primary lesion, and study dates for each patient.

- 1) Cancer patients just after completion of surgery, irradiation therapy, and/or chemotherapy
- 2) Patients visiting this clinic for observation of outcome and care to improve QOL and prevent recurrence

- 3) Patients who consent to ingest BioBran at 3 g/day.

2. Study items

The study items were body height and weight, leukocyte count and subsets (neutrophils, lymphocytes, monocytes, eosinophils, basophils, and band cells), NK activity, tumor markers, adverse reactions (abdominal pain, vomiting, and an enlarged feeling in the abdomen), and interruptions of administration and the reasons for interruption.

Height was measured at the start of the study. Body weight and leukocyte count and subsets were checked 3 times at the start of, during,

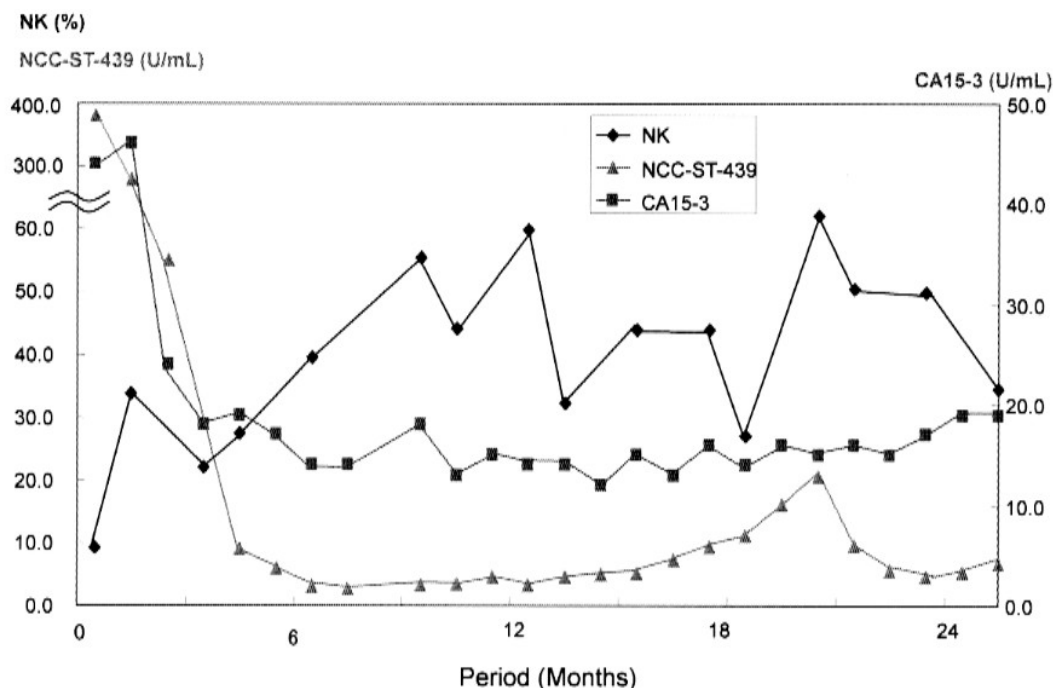


Figure 2 Breast Cancer (Stage IV) F.A. (46) F.

and at the end of the study. NK activity and tumor markers were determined every month. Adverse reactions and interruptions of ingestion were checked throughout the study period.

3. Rice bran arabinoxylan derivative (BioBran)

The study substance BioBran is produced by partially hydrolyzing rice bran extract with many carbohydrases. There are many reports on the physiological actions of MGN-3, the generic name of BioBran, such as immunomodulation³⁻⁴⁾, active-oxygen scavenging⁵⁾, blood sugar control⁶⁾ and reduction of adverse reactions to anticancer drugs⁷⁾.

Results

All 16 subjects completed the administration of BioBran continuously during the study period.

1. Changes in body weight

Body weight increased in 10 patients, decreased in 2, and was unchanged in 4. The range of change was within 4% for both increase and decrease. BioBran had almost no effect on body weight. Table 2 shows changes in body weight.

2. Changes in leukocytes

Changes in leukocyte counts and subsets were studied. Table 3 shows leukocyte counts and results for neutrophils and

lymphocytes. The normal range is 4000-9000/mm³ for the leukocyte count, 40%-60% for the neutrophil fraction, and 30%-45% for the lymphocyte fraction. Individual measurements before and after administration were divided into the categories of H (higher than the normal ranges), N (within the normal ranges), and L (lower than the normal ranges) (Table 4).

The changes in measurements were classified into the categories of increase (changes above 10% for leukocyte counts and 5% each for neutrophil and lymphocyte fractions), no change (changes within $\pm 10\%$ and $\pm 5\%$ each, respectively), and decrease (changes under -10% and -5% each, respectively) (Table 5).

The leukocyte count was generally low in the subjects of this study because they had just completed conventional treatments: it was below the normal range in 7 of 16 patients (44%).

After 6 months of BioBran administration, the leukocyte count increased in 9 of 16 patients, and 3 of them had a normal value. The fraction of neutrophils increased slightly, but no constant trend was observed. The lymphocyte fraction was low, and there was almost no change before and after administration. In 1 patient each, however, the value changed from a low level to the normal range and from a high level to the normal range. Overall, changes towards a healthy condition were observed, but no adverse changes were noted in the leukocyte profile for 6 months.

3. NK activity and tumor markers

The NK activity at the start of the study was $\leq 30\%$ in 11 patients, 30%-50% in 3, and $\geq 50\%$ in 2, and the rate of patients with normal NK activity was 19%. After administration of BioBran, the NK activity tended to increase, and 11 patients (69%) had a normal NK activity. Tumor markers decreased in 10 (63%) after administration of BioBran.

Figure 1 and Table 6 show changes in NK activity.

4. Adverse reactions

No adverse reactions to BioBran were observed and reported by any patient.

5. Cases who had marked improvement in nutritional state

- 1) Patient initials: F.A., female, 46 years, recurrent breast cancer (stage IV)

The patient received a diagnosis of breast cancer in July 1998 and underwent surgery and hormonal treatment. After 2 years and 6 months, she had metastases in the left iliac bone, lumbar vertebra, and uterine body. A hysterectomy was performed and Taxol and Paraplatin given for bone metastases. However, no improvement was observed, and metastases to the thoracic vertebrae and ribs occurred. She visited our clinic in July 2001, when the tumor markers CA15-3 and NCC-ST-439 were at high concentrations of 44 U/mL and 369 ng/mL, respectively, and

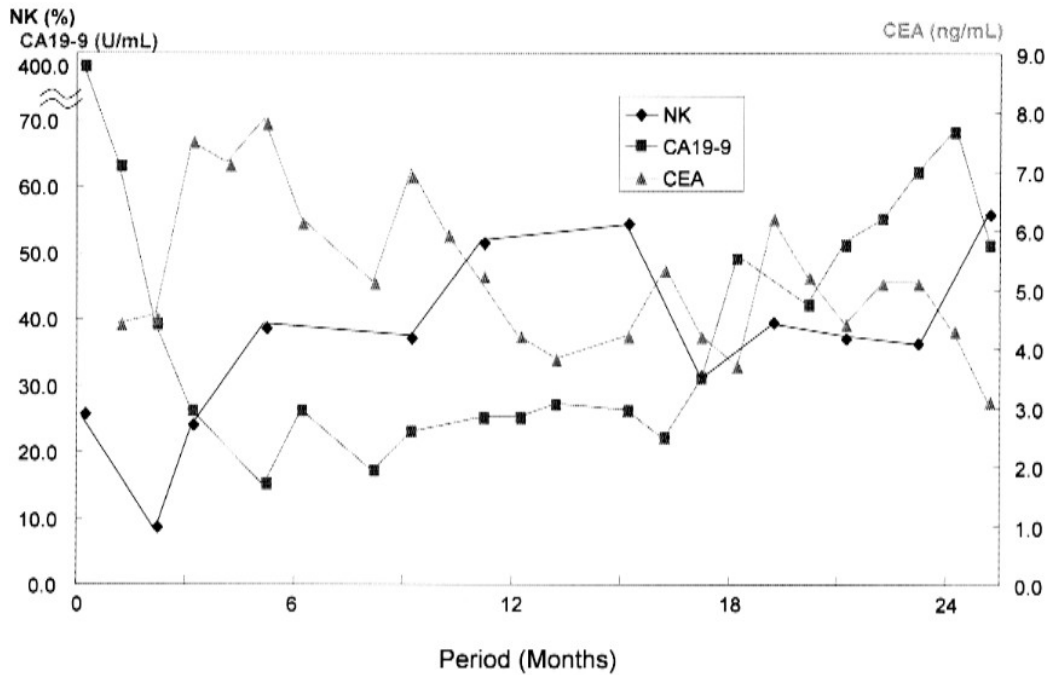


Figure 3 Stomach Cancer (Stage IV) T.S. (60) F.

the NK activity was at a low level of 9.3%. She had malaise, severe bone pain, and low QOL (PS2). She received our therapy while continuing administration of Paraplatin. BioBran was taken at 3 g/day. The NK activity increased to 33.7% at 1 month, and the levels of two tumor markers decreased rapidly at 2 months. At 7 months, pain due to bone metastases disappeared and malaise was reduced. Now after 34 months (April 2004), she lives a normal life with QOL maintained (PS0) (Figure 2).

2) Patient initials: T.S., female, 60 years, stomach cancer (stage IV)

The patient underwent an operation for scirrhus carcinoma of the stomach, but curative resection was impossible because of cancerous peritonitis. She visited our clinic in August 2001 and complained of abdominal

pain, an enlarged feeling in the abdomen, anemia, and anorexia (PS1). She was given the oral anticancer drug TS-1 and our hospital's therapy. BioBran was taken at 3 g/day. The level of CA19-9 was 390 (U/mL) at the first visit and reduced within the normal range at 3 months. The level of CEA increased, but began to decrease at 6 months. Subjective symptoms gradually improved. Now at 33 months (April 2004), her nutritional state is good, and she lives a normal life (PS0) (Figure 3).

Discussion

During administration of BioBran, the patients' nutritional state was good, and they had no exacerbation in subjective and objective symptoms. Overall improvement was observed. The leukocyte count was low in many patients at the start of the study, but

increased in almost all patients at the end of the study, and some had a normal value. Our clinic's complementary medicine maintains good physical conditions in high frequency after conventional cancer treatment. The conditions of patients in the present study were especially good, without a large difference in nutritional state between the patients and healthy people. The NK activity tended to increase: the number of patients with normal NK activity changed from 3 before the study to 11 after the study. These results supported data reported from other institutions⁸⁾. These phenomena were not clearly observed in patients who were not given BioBran.

Long-term administration of BioBran had no adverse effects like compromised immunity on cancer patients after conventional treatment, suggesting that BioBran is useful as a diet therapy that assists the improvement of the nutritional state.

Conclusion

Long-term administration of BioBran caused no subjective or objective adverse effect in cancer patients with decreased immunity. Improvement, rather than adverse changes, was observed in leukocyte counts and subsets. The NK activity decreased at the baseline, but normalized after administration.

Bibliography

- 1) Tsunekawa, H.: Guide to a Modern Regimen, SHINNIPPON-HOKI PUBLISHING CO., LTD., Nagoya, 2000
- 2) Albanes D.: Beta-carotene and lung cancer: a case study. *Am J Clin Nutr.* June, 69 (6): 1345s-1350s, 1999
- 3) Ghoneum M.: Enhancement of Human Natural Killer Cell Activity by Modified Arabinoxylan from Rice Bran (MGN-3). *INT.IMMUNOTHERAPY X IV* (2): 89-99, 1998
- 4) Ghoneum M. and A. Jewett: Production of TNF- α and IFN- γ from Human Peripheral Blood Lymphocytes by MGN-3, a Modified Arabinoxylan from Rice Bran. *Cancer Detection and Prevention*, 2000
- 5) Tazawa, K. et al.: Scavenging Activity of MGN-3 (Arabinoxylan from Rice Bran) with Natural Killer Cell Activity on Free Radicals, *Biotherapy*, 14: 493-495, 2000
- 6) Ohara I., Tabuchi R. and K. Onai: Effects of Modified Rice Bran on Serum Lipids and Taste Preference in Streptozotocin-Induced Diabetic Rats. *Nutrition Research*, 20 (1): 59-68: 2000

-
- 7) Jacoby H., Wnorowski G., Sakata K. and H. Maeda: The Effect of MGN-3 on Cisplatin and Adriamycin Induced Toxicity in the Rat. *Journal of Nutraceuticals Medical Foods*: 3 (4): 3-11, 2001
 - 8) Ghoneum M.: NK Immunorestration of Cancer Patients by MGN-3, A Modified Arabinoxylan Rice Bran (study of 32 Patients Followed for up to 4 years). *Anti-Aging Medical Therapeutics*, Vol. III: 217-226

This paper is a translation of an article in *Clinical Pharmacology and Therapy*, Vol. 14/No. 3/May 2004.

標準治療終了後の癌患者に対する
機能性食品の長期摂取の影響

恒川消化器クリニック
恒川 洋

医 薬 出 版

標準治療終了後の癌患者に対する 機能性食品の長期摂取の影響

恒川消化器クリニック*
恒川 洋

要 約

標準的な癌治療を受けたIV期を中心とする進行癌患者に対して、機能性食品の一つである米ぬかアラビノキシラン誘導体（バイオブラン）の長期摂取の影響を観察した。対象は手術、化学療法および放射線治療等の治療を受けた直後の原発巣の異なるステージIV期を中心とする16名の患者であった。観察は治療によって体力を消耗した患者の栄養状態に対するバイオブランの影響と安全性を中心に行った。摂取期間中、体重の減少、白血球数の低下、白血球分画の著明な変動等は観察されず、逆に白血球数は増加傾向を示した。また、半数以上の患者でNK活性の上昇、腫瘍マーカーの低下が観察された。

キーワード：補完医療、米ぬかアラビノキシラン誘導体、機能性食品、安全性

はじめに

当院では手術、化学療法、放射線治療を受けた癌患者に対し、QOLの改善をはかりつつ再発を防止し、延命効果を高める補完医療を行っている。我々はこの医療を“療養”と称している。それは、クリニックで行う“療”即ち治癒力、免疫力の強化を目的とする治療と、患者自身で行

う“養”即ち自己治癒力を高める日々の養生である。養生については、呼吸法、食養生、体の養生、心の養生等を指導している¹⁾。食養生については、現代栄養学あるいは穀菜食を中心とした栄養指導を行い、防衛体力の強化に努めている。機能性食品も食養生の一環として用いているが、摂取の決定は患者の意思に任せている。癌治療における免疫力低下の防止や副作用軽減を目的として多くの機能性食品が使用されている。

Effect of Long-term Administration of Immunomodulatory Food on Cancer Patients Completing Conventional Treatments

Hiroshi TSUNEKAWA (Tsunekawa Gastrointestinal Clinic)

*〒453-0801 名古屋市中村区太閤1-22-13 恒川ビル

表1 調査対象患者内訳

氏名	年齢	性	原発巣	調査期間
K・O	56	♂	胃	H13年1月～7月
I・R	64	♂	大腸	H13年3月～9月
M・T	59	♂	大腸	H13年3月～9月
K・K	44	♀	乳	H13年2月～8月
T・H	58	♀	直腸	H13年5月～11月
F・A	46	♀	乳	H13年7月～H14年1月
T・S	60	♀	胃	H13年8月～H14年2月
K・H	47	♀	乳	H13年12月～H14年6月
E・I	44	♂	肝門部胆管	H14年2月～8月
H・Y	59	♀	大腸	H14年2月～8月
H・M	77	♀	卵巣	H13年12月～H14年6月
M・N	72	♀	甲状腺	H14年1月～7月
Y・I	44	♂	肺	H13年10月～H14年4月
Y・H	84	♂	直腸	H14年1月～7月
N・A	39	♀	子宮頸部	H14年3月～9月
K・M	53	♂	直腸	H14年4月～10月

当院に来院するすべての患者が1種類から5種類の機能性食品を使用している。それらの多くは食物として日常摂取している成分かそれに近い成分である。しかし、食品形態は濃縮、又は部分精製された成分をカプセル、顆粒、錠剤とした製品が大半を占めている。この場合通常の商品としての成分をはるかに超えて摂取する可能性もある。ベータカロチンの過剰摂取が肺癌のプロモーターとなることも報告されていることから²⁾、安全性については十分な注意を払わなければならない。そこで通常の治療が終わり、栄養状態に問題を抱えつつ治療を継続している癌患者を対象に、当院来院の患者の中で最も使用頻度の高いバイオプランについて、長期摂取による影響を16名の患者を対象として、白血球への影響を中心に調査した。

調査方法

1. 患者と調査期間

1)～3)に該当する癌患者16名について、6カ月間調査を行った。

表2 体重の変動 (kg)

氏名	調査始	調査後	差
K・O	70.0	71.0	+1.0
I・R	67.0	69.0	+2.0
M・T	61.0	60.0	-1.0
K・K	48.0	49.0	+1.0
T・H	53.0	53.0	0
F・A	49.0	51.0	+2.0
T・S	38.0	38.0	0
K・H	52.5	53.0	+0.5
E・I	47.0	46.5	-0.5
H・Y	50.0	51.0	+1.0
H・M	44.0	44.0	0
M・N	46.5	47.0	+0.5
Y・I	64.0	65.0	+1.0
Y・H	59.0	60.0	+1.0
N・A	45.0	46.5	+1.5
K・M	68.0	68.0	0

各患者の年齢、原発巣、調査期間を表1に示す。

1) 手術や放射線療法、化学療法を受療した直後の癌患者。

2) 予後の観察やQOLの改善、再発防止のため

表3 白血球数と白血球分画の変動

氏名	白血球数(/mm ³)			好中球 (%)			リンパ球 (%)		
	前	後	差	前	後	差(%)	前	後	差(%)
K・O	5500	6500	+1000	65.7	76.2	+10.5	24.9	19.5	-3.4
I・R	6100	4400	-1700	69.8	62.8	-7.0	24.1	27.6	+3.5
M・T	3500	4100	+600	56.4	59.5	+3.1	27.2	31.2	+4.0
K・K	3400	3600	+200	60.8	64.9	+4.1	22.7	21.3	-1.4
T・H	5700	5400	+300	51.9	53.0	+1.1	42.0	42.5	+0.5
F・A	2500	3000	+500	57.0	52.1	-4.9	24.5	42.5	+18.0
T・S	3800	4200	+400	40.0	55.3	+15.3	56.0	35.9	-20.1
K・H	4800	4400	-400	80.0	71.7	-8.3	11.0	20.6	+9.6
E・I	2800	3400	+600	57.9	67.0	-9.1	25.6	23.8	-1.8
H・Y	4200	5400	+1200	50.5	61.9	-11.4	33.7	27.2	-6.5
H・M	3000	3500	+500	54.6	63.8	+9.2	30.3	29.9	-0.4
M・N	7300	6000	-1300	68.9	62.2	-6.7	24.6	28.7	+4.1
Y・I	3700	5600	+1900	71.7	82.0	+10.3	19.7	11.5	-8.2
Y・H	5600	5800	+200	64.0	64.2	+0.2	25.2	23.5	+1.7
N・A	5200	4300	-900	80.0	71.1	-8.9	13.5	14.2	+0.7
K・M	5300	5900	+600	44.8	48.8	+4.0	35.7	23.6	-12.1

表4 正常域を中心とする白血球変動の分類

	白血球数		好中球		リンパ球	
	前	後	前	後	前	後
L	7	4	—	—	11	13
N	9	12	8	5	4	3
H	—	—	8	11	1	—

表5 白血球変動傾向の分類

	白血球数	好中球	リンパ球
増加	9	5	2
不変	4	5	10
減少	3	6	4

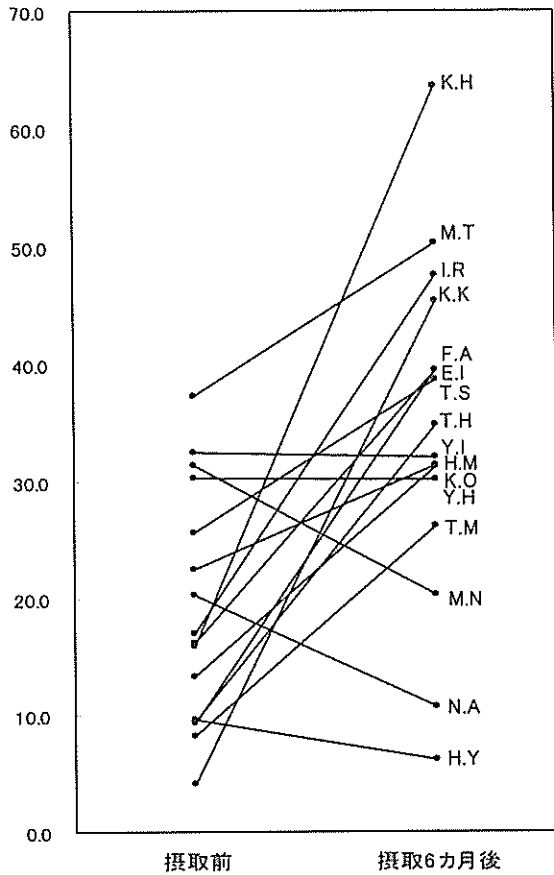


図1 NK活性の変動

表6 NK活性の変動

氏名	摂取前	摂取6カ月後
K・O	13.3	31.2
I・R	17.0	47.5
M・T	37.2	50.3
K・K	4.1	45.3
T・H	9.5	34.8
F・A	9.3	39.5
T・S	25.6	38.6
K・H	15.9	63.6
E・I	16.2	39.4
H・Y	9.6	6.1
H・M	22.5	31.4
M・N	31.4	20.3
Y・I	32.4	32.0
Y・H	30.3	30.2
N・A	20.3	10.7
K・M	8.2	26.2

3. 米ぬかアラビノキシラン誘導体 (バイオブラン)

本調査の対象となったバイオブランは、米ぬかエキスを複数の炭水化物分解酵素で部分的に加水分解したもので、MGN-3の検体名で、免疫調節作用³⁻⁴⁾、活性酸素除去作用⁵⁾、血糖値低下作用⁶⁾、抗癌剤副作用軽減作用⁷⁾等の生理活性作用についての報告がある。

結 果

調査期間中16名全員バイオブラン摂取の中断はなく、最後まで継続して摂取した。

1. 体重の変動

増加傾向10名、減少傾向2名、不変4名であった。変動幅は増加、減少いずれも4%以内であり、ほとんどバイオブラン摂取による影響は認められなかった。体重の変動を表2に示す。

2. 白血球の変動

白血球数と白血球分画の変動を調査した。白

めの療養を行う目的で、当院に通院中の患者。

3) 日常の食養生として、バイオブラン1日3gを摂取することに同意した患者。

2. 調査項目

身長、体重、白血球数、白血球分画(好中球、リンパ球、単球、好酸球、好塩基球、杆核球)、NK活性、腫瘍マーカー、副作用の有無(腹痛、吐き気、膨満感など)、摂取の中断の有無とその理由について調査した。

身長は調査開始時、体重、白血球数分画は開始時、調査中、終了時の3回行い、NK活性および腫瘍マーカーは毎月測定した。副作用の有無と摂取中断の有無は、調査期間中を通して行った。

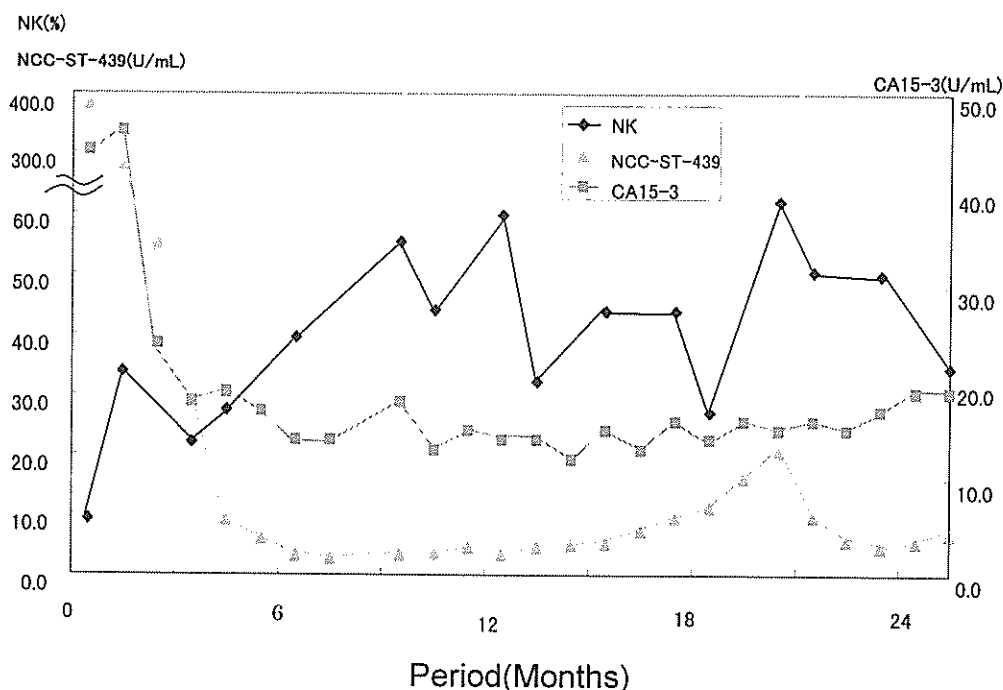


図2 Breast Cancer (Stage IV) F.A (46) F

血球数と好中球, リンパ球の結果を表3に示す。白血球数の正常域は4000~9000/mm³, 好中球の正常域は40%~60%, リンパ球の正常域は30%~45%であり, 正常域を越えている場合をH, 正常域をN, 正常域以下をLとして分類した。(表4)

個々の変動傾向について, 白血球数は10%, 好中球5%, リンパ球5%の範囲で増加, 不変, 減少で分類した。(表5)

今回の調査の対象となった標準治療が終了し, 当院に来院した患者の白血球数は全体的に低く, 16名中7名(44%)が正常値より低値であった。

バイオブラン6カ月摂取後, 白血球は増加傾向を示し, 16名中9名が増加し, その内3名は正常域に入った。好中球の割合はやや増加気味であったが, 個々についての摂取前後には一定の変動傾向は認められなかった。リンパ球は低下傾向にあったが, 個々の変動は殆ど認められなかった。しかし, 各1例低値から正常域, 高値から正常域への変動が認められた。全体的な評価として, 6カ月間の白血球像は, 健康な状態へ変動は認められるものの, 特に不都合な変動は

観察されなかった。

3. NK活性および腫瘍マーカー

調査開始時のNK活性は全般に低く, 30%以下が11名, 30%~50% 3名, 50%以上が2名で正常域の患者の割合は19%であった。バイオブラン摂取によりNK活性は上昇傾向を示し, 終了時には正常域の患者が11名, 69%と増加した。また, バイオブラン摂取後に腫瘍マーカーが減少した患者は10名, 63%であった。

全患者のNK活性変動を図1と表6に示す。

4. 副作用

バイオブラン摂取による副作用と考えられる現象は, 調査期間中全く観察されず, 患者からの報告もなかった。

5. 栄養状態の著明な改善が観察された例

1) 患者名: F.A 46歳女性 再発乳癌(IV期)

平成10年7月に乳癌と診断され手術。手術後抗癌剤とホルモン治療を行う。2年6カ月後左胸

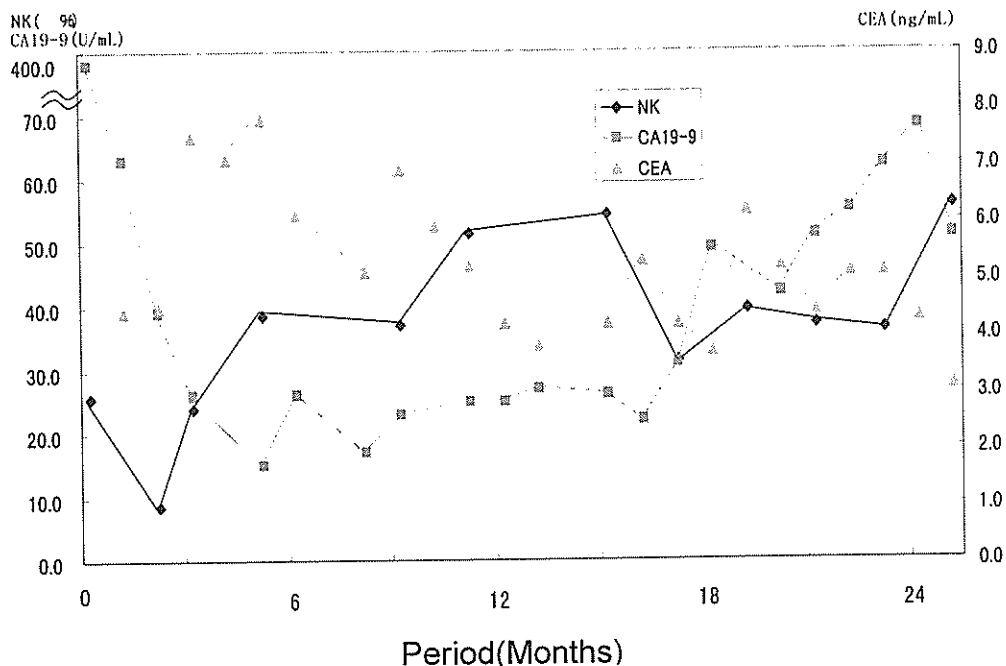


図3 Stomach Cancer (Stage IV) T.S (60) F.

骨、腰椎と子宮体部への転移を認める。子宮摘出術と骨転移に対してタキソール、パラプラチンが投与されたが改善がみられず、その後胸椎と肋骨に転移。平成13年7月に来院。来院時腫瘍マーカーCA15-3が44 (U/mL), NCC-ST-439が369 (ng/mL)と高値を示し、NK活性は9.3%と低値であった。全身倦怠感と骨の痛みが強く、QOLは不良(PS2)であった。パラプラチンの投与を継続しつつ当院の療養を行った。バイオブランは1日3g投与した。1カ月後、NK活性が33.7%に上昇し、2カ月後には2つの腫瘍マーカーが急激に減少した。7カ月後には骨転移による痛みが消失し、倦怠感が軽快した。34カ月を経過した現在(平成16年4月)もQOLは保たれ通常の生活(PS0)を行っている(図2)。

2) 患者名: T.S 60歳女性 胃癌(IV期)

スキルス性胃癌で手術を受けるも癌性腹膜炎の合併があり、非治癒切除となった。平成13年8月腹痛、腹部膨満感、貧血、食欲不振等を訴えて来院(PS1)。経口抗癌剤TS-1の投与と当院の療養を行った。バイオブランは1日3g投与した。来院時CA19-9は390 (U/mL)であったが3カ月

後には正常域まで減少した。一方CEAは逆に上昇したが6カ月目には低下傾向を示した。自覚症状も徐々に改善された。33カ月を経た現在(平成16年4月)、栄養状態は良好で通常的生活(PS0)を送っている(図3)。

考 察

摂取期間中、患者の栄養状態は良好で自覚的、他覚的増悪は認められなかった。全般的には改善の方向へ向かう傾向がうかがわれた。白血球数は、調査開始時は低い患者が多かったが、終了時には低めの患者は殆ど全員増加傾向を示し、正常値まで回復した患者も認められた。当院における“療養”の考え方による補完医療により、癌の治療後の予後は良好な状態が保てる率が高いが、今回調査の対象となった患者の状態は特に良好で、全員、栄養状態は健常人と大差はなかった。またNK活性は、上昇傾向にあり、正常域の患者が調査前の3名に対し、調査終了時には11名に増加し、他施設の報告のデータを裏付ける結果が得られた⁸⁾。このような現象はパイ

オブランを摂取しない場合には、顕著ではなかった。

バイオブランの長期摂取は、標準治療終了後の癌患者に対して、免疫系に負荷がかかっていると考えられる、不都合な現象は認められず、栄養状態の回復を補助するための食養生の一つとして有用性を示唆する結果が得られた。

結 論

免疫力低下傾向がみられた患者にバイオブランを長期間摂取することによる自覚的、他覚的副作用は認められなかった。白血球数および分画においては、不都合な変動はなく、改善傾向が認められた。また、NK活性への影響は低下気味の患者の正常化を助ける傾向が認められた。

文 献

- 1) 恒川洋：現代養生法ガイド：新日本法規出版株式会社。名古屋，2000
- 2) Albanes D.: Beta-carotene and lung cancer : a case study. *Am J Clin Nutr.* June, 69 (6): 1345s ~ 1350s, 1999
- 3) Ghoneum M.: Enhancement of Human Natural Killer Cell Activity by Modified Arabinoxylan from Rice Bran (MGN-3). *INT. IMMUNOTHERAPY X IV* (2): 89 ~ 99, 1998
- 4) Ghoneum M. and A. Jewett: Production of TNF- α and IFN- γ from Human Peripheral Blood Lymphocytes by MGN-3, a Modified Arabinoxylan from Rice Bran. *Cancer Detection and Prevention*, 2000
- 5) 田澤賢次等：NK細胞活性作用を有するMGN-3（バイオブラン）の活性酸素消去能の検討。 *Biotherapy* 14: 493 ~ 485, 2000
- 6) Ohara I., Tabuchi R. and K. Onai: Effects of Modified Rice Bran on Serum Lipids and Taste Preference in Streptozotocin-Induced Diabetic Rats. *Nutrition Research*, 20(1): 59 ~ 68: 2000
- 7) Jacoby H., Wnorowski G., Sakata K. and H. Maeda: The Effect of MGN-3 on Cisplatin and Adriamycin Induced Toxicity in the Rat. *Journal of Nutraceuticals Medical Foods*: 3(4): 3 ~ 11, 2001.
- 8) Ghoneum M.: NK Immunorestration of Cancer Patients by MGN-3, A Modified Arabinoxylan Rice Bran (study of 32 Patients Followed for up to 4 years). *Anti-Aging Medical Therapeutics*, Vol.III: 217 ~ 226

Effect of Long-term Administration of Immunomodulatory Food on Cancer Patients Completing Conventional Treatments

Hiroshi TSUNEKAWA
Tsunekawa Gastrointestinal Clinic

Summary

A study was conducted to investigate the effects of long-term administration of the immunomodulatory food BioBran, rice bran arabinoxylan derivative, on 16 cancer patients mainly in stage IV with various conventional lesions who had just treated conventional cancer treatments, such as surgery, chemotherapy and radiotherapy. The main clinical observations were the safety and effect of BioBran on the nutritional state of the patients, who were exhausted due to treatment. During the administration period, no decreases in body weight and leukocyte count or significant changes in leukogram were observed. Rather, the leukocyte count increased. In addition, most of patients showed an increase in NK cell activity and a remarkable decrease in tumor markers.

Key words: complementary medicine, rice bran arabinoxylan derivative, immunomodulatory food, safety