

**Clinical Studies of the Effects of *Agaricus blazei* Murrill(Iwade Strain 101)  
on Cancer Patients**

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**[Study Objectives]**

Chemotherapy, surgery and radiotherapy are primarily used for cancer treatment. These therapies are highly likely to induce adverse reactions, often making it difficult to continue treatment. The present study was undertaken to evaluate the efficacy of an Agaricus product in patients with various types of cancer. The Agaricus product was a mixture of powdered Chlorella extract and powdered extract from the fruiting body of *Agaricus blazei* Iwade 101 strain (previously shown to have potent anti-cancer activity) and its mycelium.

**[Method of experiments]**

The study group was patients hospitalized to five centers specializing in cancer treatment located in Shanghai, China. Thirty patients were diagnosed as having lung cancer, liver cancer, breast cancer, gastric cancer, pancreas cancer, or colorectal cancer. Twenty patients (5 males and 15 females) took the Agaricus product for 30 days and the remaining 10 (3 males and 7 females) took it for 90 days. The route of administration was oral in both groups. During the period of Agaricus intake, other therapies were continued.

Each patient took the Agaricus product at a daily dose of 12 g (in three divided doses; before each meal or between meals; p.o.). The condition of each patient before and after intake of the Agaricus product was evaluated through analysis of the following indicators: KPS [1], percentage of NK cells [2] and VEGF [3].

**[Results]**

1) KPS

KPS rates the performance status on a scale ranging from dead (score 0) to healthy (score 100) at intervals of 10 scores. A higher KPS score after intake of the Agaricus product from the pre-intake score means that the patient has become closer to a healthy

condition or the patient's quality of life (QOL) has improved.

The percentage of patients showing an increase in KPS score after intake of the Agaricus product was 75% in the 30-day intake group and 80% in the 90-day intake group. The percentage of patients showing improvement (increase in KPS score) tended to be higher as the period of intake of the Agaricus product became longer.

Table 1. Changes in KPS score after intake of the Agaricus product from the pre-intake score

Change in KPS score post-intake score – pre-intake score	30-day intake group		90-day intake group	
	No. of patients	Percentage	No. of patients	Percentage
20	6	30	4	40
10	9	45	4	40
0	4	20	2	20
-10	1	0	0	0
Total	20	100	10	100

## 2) Percentage of NK cells

NK cells are immunocompetent; they recognize cancer cells and attack them. Changes in the percentage of NK cells after intake of the Agaricus product from the pre-intake percentage were analyzed. In this analysis,  $\geq 1.2$ -fold increase in the percentage of blood NK cells after intake of Agaricus product was seen in 56% of patients from the 30-day intake group and in 60% of the patients from the 90-day intake group. Intake of the Agaricus product tended to result in a higher percentage of NK cells in the blood.

Table 2. Changes in the percentage of NK cells after intake of Agaricus product compared with the pre-intake percentage

Change (increase) in percentage of NK cells* <sup>1</sup> pre-intake/post-intake	30-day intake group		90-day intake group	
	No. of patients	Percentage	No. of patients	Percentage
$\geq 1.5$ -fold	7	44	3	30
$\geq 1.2$ -fold and $< 1.5$ -fold	2	12	3	30
$> 1.1$ -fold and $< 1.2$ -fold	0	0	1	10
$< 1.1$ -fold	7	44	3	30
Total	16	100	10	100

\*1 Change in percentage of NK cells = Post-intake NK cell percentage/Pre-intake NK cell percentage

### 3) VEGF

Cancer cells produce the glycoprotein VEGF in larger amounts than normal cells so that they can proliferate. This factor stimulates the formation of new blood vessels through which the proliferating cancer cells can receive more nutrients. If VEGF level can be reduced, the proliferation and spread of cancer may be prevented.

Table 3 shows percentage VEGF suppression after intake of Agaricus product. The percentage of patients showing  $\geq 20\%$  suppression of VEGF formation was 80% in the 30-day intake group and the 90-day intake group. This result suggests that the Agaricus product tends to suppress the formation of VEGF.

Table 3. Relationship between intake of Agaricus product and percentage VEGF suppression

Percentage VEGF suppression <sup>*2</sup>	30-day intake group		90-day intake group	
	No. of patients	Percentage	No. of patients	Percentage
$\geq 50\%$	2	40	1	10
$\geq 20\%$ but $< 50\%$	2	40	7	70
$\geq 10\%$ but $< 20\%$	0	0	0	0
$< 10\%$	1	20	2	20
Total	5	100	10	100

\*2 Percentage VEGF suppression (%) =  $\{1 - (\text{post-intake VEGF level} / \text{pre-intake VEGF level})\} \times 100$

#### [1] KPS

KPS is an abbreviation of Karnofsky Performance Scale.

#### [2] Percentage of NK cells

Percentage of NK (natural killer) cells among leukocytes

#### [3] VEGF

VEGF is an abbreviation of vascular endothelial growth factor.

<<Specifications of the article>>

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