



The Mysterious Blak Garlic beyond the Vegetable

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Abstract

Natures of the mysterious black garlic developed just by heating a fresh garlic in an incubator was analyzed on chemical and biological functions aiming at application for human health improvement. Then it was found that the S-allyl-L-cysteine deeply associated to the multi biological functions such as an anti-tumor, anti-oxidant, NK cells activity et al. And WHO, Wall Street Journal recommended to take it daily to maintain the health conditions.

Keywords: Black garlic, Chemical Facts, Multi-Biofunctions, Evaluations, S-allyl-L-cysteine.

1. Introduction

The Heat Stress Induced Black Garlic was not a new species in the classification but developed from the fresh garlic by treatment under the heat and moisture control circumstances for around a month without any other chemical additives [1, 2]. This manufacturing method was devised by the villager who had seen the diving women's heavy work to collect shell from the sea bottom. They took a baked raw garlic before diving to get energy. Villager (Mr. Hamano) who saw and decided to devise some simple way for taking of raw garlic directly. After repeated tests, he finally got the prototype of the Black Garlic by controlling temperature and humidity in a garlic processing box. Since the natures of the chemical facts and biofunction were not reported, then we initiated the black garlic research. This paper covers those requires and the evaluation of the black garlic in the world was also introduced.

2. Develop elements of the Black Garlic

Required conditions to develop the black garlic is just control of temperature and humidity in an incubator without any others. This simplicity is a great advantage for expanding of the temperature and black garlic making among the citizen in Japan. One of the points to note is toward the irritative volatile gas released from garlics processing. Concretely it is better to use the outside of house.

3. Chemical Constituents [3]

3-1 General Facts Comparison of the Black Garlic and Fresh Garlic

Parameter	Black Garlic	Fresh Garlic
Energy (kcal/100 g)	227.1	138
Water (%)	45.1	60.3
Protein (%)	9.1	8.4
Lipid (%)	0.3	0.1
Carbohydrate (%)	47	28.7
Ash (%)	2.1	ND
Na (mg)	4	ND
Ca (mg)	24	ND
Lactobacillus (No./g)	<300	ND

3-2. Relevancy between S-allyl-L-cysteine (SAC) and γ -glutamyl-S-allyl-L-cysteine (GSAC) in processing (SAC (Central role player in BG bio-activity))

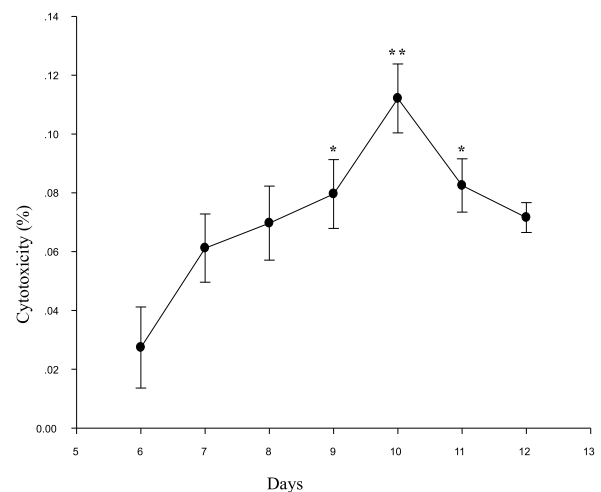
	SAC (μ g/g)	GSAC (μ g/g)
Black garlic	194.3	248.7
Fresh garlic	23.7	748.7

SAC amount increased by processing but GSAC decreased, suggesting GSAC converted into SAC by processing treatment SAC is considered to play a central bio-activity of the black garlic.

4. Bio-Functions of the Black Garlic

4-1. Anti-tumor activity against Meth A mouse fibrosarcoma [4].

Sample	Dosage treated	Cured/Used	
Black garlic extracts	1 mg (three shots)	2/5	40
Control (saline)	(-)	0/5	100



4-2 Enforcement of Cytotoxicity of NK cels.

It reached peak at 9 days after the BG powder treated mouse [2].

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5 Additional other biofunctions of the Black Garlic reported

- [5]
- Enforcement of anti-oxidant activity**
- Strengthen immune system**
- Bacteria killing potency**
- Suppress of carcinogenesis effect [6].**

6 World Wide Evaluation of The Black Garli biological effects

In May 2006, the lack garlic made a debut via the TV and News Paper in Japan with a Title 'Stroger Antitumor potency than that of the raw garlics' as shown in Photo 1.



Photo 1: Anti-tumor potency of the Black Garlic in mouse model.

We submitted these results to the journal, but rejected of Latin name of the black garlic It took some times to persuade the referees to explain the situation 'Black Garlic was developed in Japan with no Latin Name). It was as a historical debut of the black garlic. [2]

Encouraging Words from WHO [6]

The black garlic produced in the land of the rising of the sun as it has developed elaborated producing technique (H. Hamano, 2004), This food has become world-famous thanks to recent scientist that has research by Japanese researcher J. Sasaki first demonstrated the benefits. It is good for you and regular consume. The black garlic is recommended by WHO. Lately, the tablet and capsule types of the black garlic were prepared for the client much easier to take.

Mail from the Wall Street Journal [7]

I am a United States journalist, and I write a consumer health column for the Wall Street Journal I have seen some of your work and would love to speak with you or ask you questions by mail or both. Laura Johannsson (2016, Jun, 20 Life Health Aches and Claims.)

Le mystere de l'ail noir (Camille Labro) [8]

ALICAMENT

Il aprait sur la cote sud-est du Japon au debut des anees 2000. C'est la que sa technique de production semble avoir ete finalisee:less tetes deail sont matuurees de quin a vingt jours s un lieu clos a 60-80C, avec un taux d'humiditede 70 90 % La transforzement spectaculaire des goussesst a tout s implement, t le resultat d'une (d'tres lente) caramelization , connue dsous le nom de reaction de Ma sont . C'est a Aomori dans le nord du Japon qu'il deviant cerebre, grace aux travaux du profen esseur Jin-ichi Sasaki, qui demontreses vertus exceptionnelles, notamment pour combattaltre cetem.

Conclusively Consideration

The novel vegetable black garlic becomes almost 20years old after born in Japan He now armed with various bio-functions to help the citizen health conditions to fight the disease. I have a great concern how the black garlic effect to s allergy, cancer, brain works, diabetes et al. Furthermore, lately the herb associate function project has launched in the Saudi Arabia to develop new functional substance from the world scientists.

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