

Comparison of Alliin Contents between Warm Season Garlics and Cold Season Garlics

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Objectives

Garlics has been known as the most effective medicinal plant and disease-preventive food against various disease. Especially, alliin in garlics has played major role in biochemical activities and antibacterial effects. Amounts of alliin vary according to many factors such as species and growth conditions. This study was conducted to compare with the contents of alliin between warm season garlics and cold season garlics using HPLC.

Materials and Methods

○ Materials

No.	Accessions	No.	Accessions
1	555 : DO10915	12	332 : Local 7
2	109 : Hongcheon	13	657 : Mokpo
3	606 : DO11002	14	60 : Wando
4	304 : 8801	15	400 : w/n 40
5	517 : 92-03-01	16	116 : Heilong Jiang
6	176 : Daegwan	17	84 : Okgu 2
7	431 : Local(winter)6	18	648 : U05104
8	457 : 93-13-1	19	470 : 93-05-03
9	276 : Sicilian red	20	565 : Do10925
10	619 : USA0306	21	618 : USA0305
11	584 : DO10944	22	232 : Hwangsan

Accession number : inheritance resource classification number

No.1 to 11 : cold season garlics, 12 to 22 : warm season garlics

○ Methods

- Preparation of samples

1. 1g of frozen garlic powder was mixed with 50% methanol 20mL which contains 0.1% formic acid and shaken at 250 rpm for 60 min.

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2. After shaking, the solution was filtered under vacuum Buchner filter and Whatman No.5 filter paper and removed lipids and impurities with separatory funnel using ether.
3. Add ethanol and precipitate over 24h and evaporate, dissolve it in 1ml of water.
4. Dissolved supernatant was added in 5mL of cold methanol and 40mL of 50°C acetone then, crystallized it at low temperature for 24h.

-Quantitative analysis of alliin

1. Dissolve sample in water to make it have constant concentration and do the HPLC analysis.
2. The condition of alliin analysis by HPLC

Column	Phenomenex Luna C18 100 Å 250×4.60 mm
Pump	Dionex P680 pump
Detector	Dionex UV detector (UVD170U)
Eluent	60 % Methanol of 0.05 % Trichloroacetic acid water
Injection volume	20 uL
Flow rate	0.55 mL/min
Run time	12 min

Results and discussion

Average alliin contents of whole samples were 89.20mg/g. Average alliin contents of cold season garlics (94.79mg/g) were higher than those of warm season garlics (83.62mg/g). Sample no.1 (Accession number 555) had the highest alliin contents (151.90mg/g) among the cold season garlics samples. Among the warm season garlics samples, sample no.12 (Accession number 332) contained the highest contents of alliin (114.59mg/g).

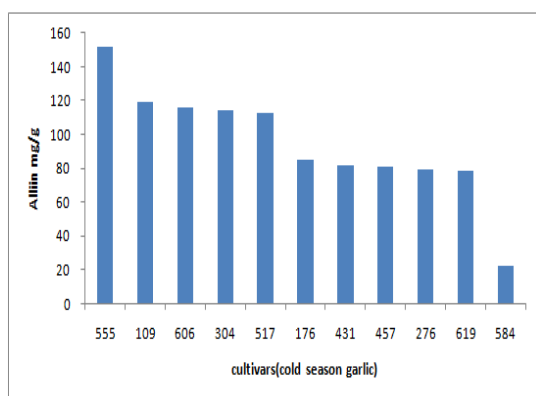


Figure 1. The alliin contents of cold-season garlics cultivars

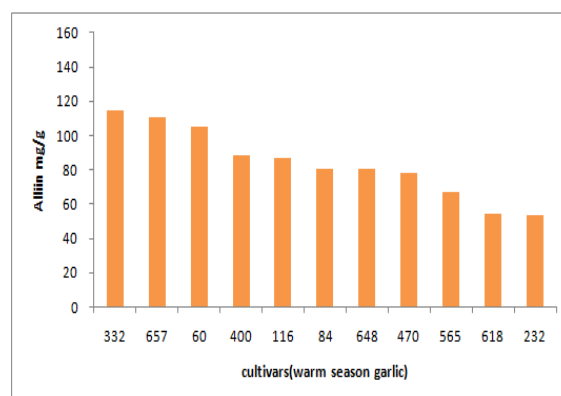


Figure 2. The alliin contents of warm-season garlics cultivars