

## Phenolic Compounds of Warm Season 22 Garlic (*Allium sativum* L.) Lines

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### 난지형 마늘(*Allium sativum* L.) 22종의 페놀성 화합물

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### Objectives

This study was designed to investigate the possible utilization of Garlic(*Allium sativum* L.) as a source of functional ingredients. It has been reported to contain various phenolic compounds which have antibiotic and anticarcinogenic properties and thus may reduce the possibility of cancer and chronic diseases.

### Method and Materials

#### Plant materials

- 22 kinds of warm season garlic lines cultivated and collected in Dan-yang, Chuncheoungbuk-do region.

#### Methods

- Each garlic part was repeatedly freeze dried then ground. Two grams of each powder were mixed with 10 mL of acetonitrile (ACN) and 2 mL of 0.1 N HCl for 2 h at room temperature to extract solutes before filtering through No. 42 Whatman filter paper and evaporated. Each sample was redissolved in 10mL of 80% methanol (MeOH) solution, and the HPLC sample was used after filtering with a 0.45  $\mu$ m syringe filter (TITAN, nylon)

HPLC	Agilent 1100 series (Germany)
Detector	G1315B DAD detector
Column	YMC-Pack ODS-AM-303 (5 $\mu$ m, 4.6mm $\times$ 250mm I.D.)
Mobile phase	A - 0.1% glacial acetic acid in millipore water B - 0.1% glacial acetic acid in ACN
Flow rate	1mL/min
UV	280nm

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## Result

The total content of phenolic compounds was  $9762.67\mu\text{g g}^{-1}$  in garlic 22 lines. The contents of myricetin among 22 lines showed the highest concentrations with  $4370.16\mu\text{g g}^{-1}$ . Caffeic acid, chlorogenic acid and pyrogallol exhibited  $665.845\mu\text{g g}^{-1}$ ,  $664.22\mu\text{g g}^{-1}$  and  $638.205\mu\text{g g}^{-1}$ , respectively. On the other hand, hesperetin, syringic acid and *t*-cinnamic acid content were low  $1.44\mu\text{g g}^{-1}$ ,  $3.585\mu\text{g g}^{-1}$  and  $4.315\mu\text{g g}^{-1}$ . This results will contribute warm season garlic breeding with the high content phenolic compounds.

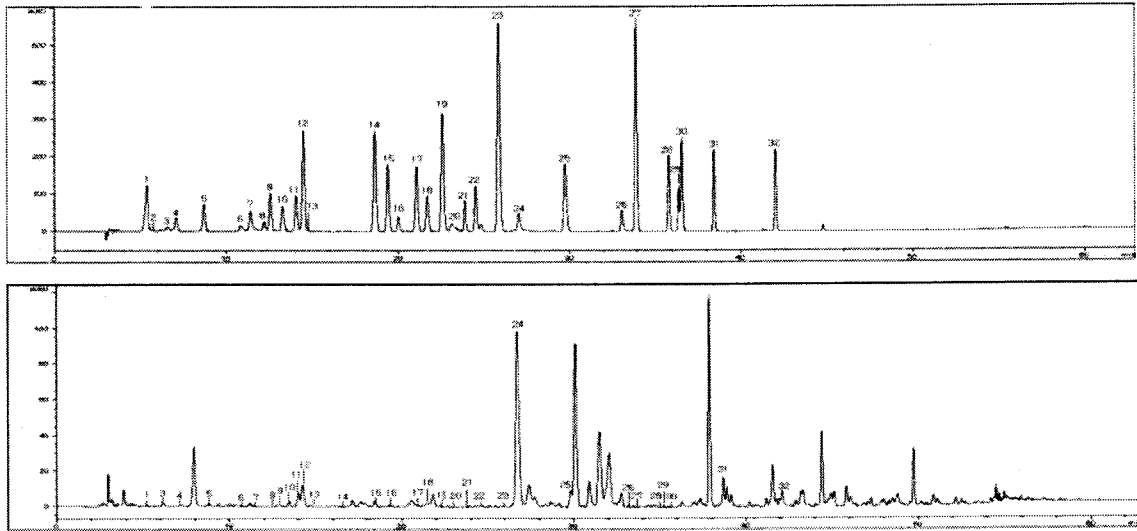


Figure1. The chromatogram of 32 phenolic compound and M2008

A: standard phenolic compounds, B: M2008

1: Gallic acid, 2: 5-Sulfosalicylica acid, 3: Pyrogallol, 4: Homogentisic acid, 5: Protocatechuic acid, 6: Gentisic acid, 7: Chlorogenic acid, 8: (+)Catechin, 9: *p*-Hydroxybenzoic acid, 10: *b*-Resorcylic acid, 11: Vanillic acid, 12: Caffeic acid, 13: Syringic acid, 14: Vanillin, 15: *p*-Coumaric acid, 16: Rutin, 17: Ferulic acid, 18: Veratric acid, 19: *m*-Coumaric acid, 20: Salicylic acid, 21: Naringin, 22: Hesperidin, 23: *o*-Coumaric acid, 24: Myricetin, 25: Resveratrol, 26: Quercetin, 27: *t*-Cinnamic acid, 28: Naringenin, 29: Kaempferol, 30: Hesperetin, 31: Formononetin, 32: BiochaninA

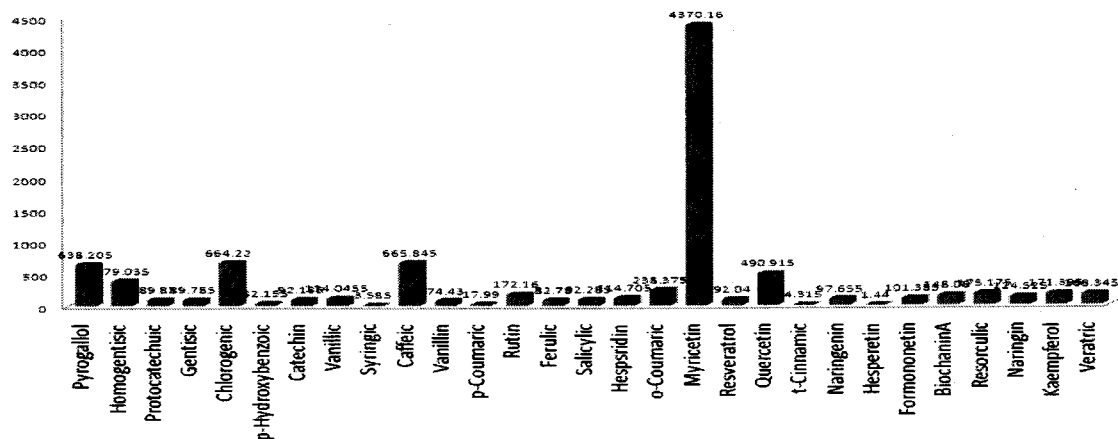


Figure2. Total contents of phenolic compounds in warm season garlic.