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Screening of Phenolic Compounds in Garlic(*Allium sativum* for. pekinense) using HPLC

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HPLC를 이용한 마늘의 Phenolic compound 분석

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목적

Garlic(Allium sativum for. pekinense)is a widely distributed plant used in the world not only as a spice but also which has been proven medicinal plant and disease-preventive food againt from cancer and cardiovascular disorders. This experiment was conducted to comparing the concentration of 32 phenolic compounds of the garlic among the 7 different countries Russia, Thailand, Peru, Italy, Bolivia, Netherland, China and danyang cultivar in korea.

재료 및 방법

○ Plant materials : 41 kinds of different origin garlic cultivated in Dan-yang, Chungcheongbuk-do

○ Methods : The samples(2g)were mixed with 2mL of 0.1N HCl and 10mL of acetonitrile, stirred for 2h at room temperature, and filtered through a Whatman No. 42 filter paper. The filtrate was concentrated to dryness under vacuum at temperature below 30℃. The dried samples were redissolved in 10mL of 80% HPLC grade methonal solution. A aliquot samples were filtered through a 0.45 ㎛ filter unit and then analyzed by HPLC equipment. The high performance liquid chromatography analysis was carried out on a product from Agilent company with a pump model agilent 1100 series and a detector model G1315B DAD. YMC-Pack ODS-AM-303 analytical HPLC column was employed for quantitative analysis. The substances being measured in analytic procedure were monitored and determined by UV wavelength of 280nm.

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결과 및 고찰

○ The total contents of phenolic compound was 15219.35㎍/g and the most phenolic compounds in Russia cultivars was detected in R4(1191.93㎍/g) and highest compounds was Pyrogallol(76.19㎍/g), and the p-coumaric was detectd infinitesimal among the total content, Thailand cultivars were T3(309.42㎍/g) and highest compounds was Protocatechuic acid(48.93㎍/g), and the Hesperetin was detectd infinitesimal among the total content, Peru cultivars were P3(456.16㎍/g) and highest compounds was Protocatechuic acid(101.33㎍/g), and the Hesperetin was detectd infinitesimal among the total content, Italia cultivars were I1(486.48㎍/g) and highest compounds was Protocatechuic acid(130.14㎍/g), and the Hesperetin was detectd infinitesimal among the total content. This result showed that the phenolic compounds concentration according to genetic characteristics varied significantly and they are affected by different origin of cultivars.

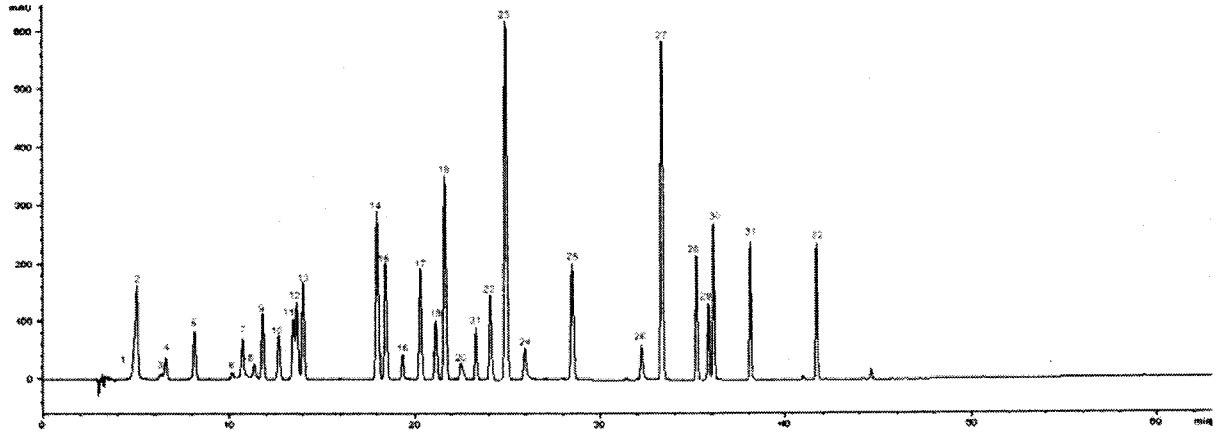

Figure 1. The chromatogram of standard of 32 phenolic compound

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

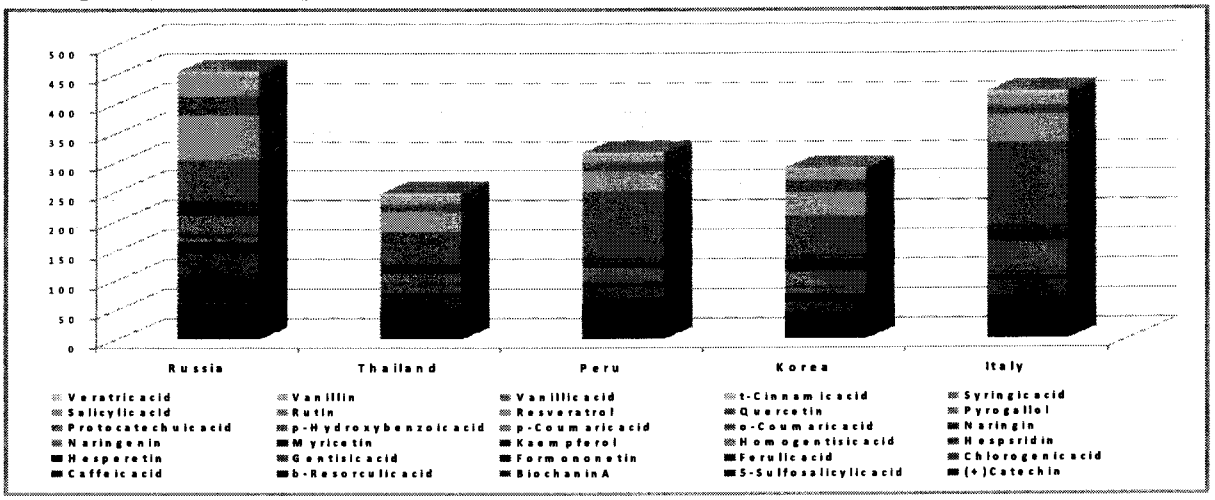

Figure 2. The average of phenolic compounds concentration of Russia, Thailand, Peru, Korea and Italia