

Isolation and Determination of Phenolic Compounds from Tuber of Color-fleshed and White-fleshed Potatoes

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Color-fleshed potatoes ‘Hong-young’ and ‘Ja-young’ were developed by RDA, and it has reported that they have high content of anthocyanin. Additionally they show higher radical scavenging activity compared to white or yellow fleshed potatoes. So it will be expected that the consumption of color-fleshed potatoes gradually increase by pre-peeled potatoes and color potato chips. This study was conducted to enhance the utilization of the tuber of color-fleshed potatoes. At first, we isolated four compounds from the organic solvents soluble layer in ethanol extract of tuber, and their structures were characterized by spectroscopic methods and by comparing their data to those in the literature. Their structures were characterized to be caffeic acid (1), chlorogenic acid (2), gallic acid (3) and protocatechuic acid (4) for the first time reported from this source. These compounds were already reported ingredients but considered to exhibit a high physiological activity. The quantitative determination on the four compounds in tuber of color-fleshed [Hong-young (HY) & Ja-young (JY)] and white-fleshed [Superior (SP)] potatoes samples were measured using HPLC. The concentration of caffeic acid in each total fractionations of HY (184.4 g/g) and JY (435.1 g/g) were higher than in total fractionation of SP (31.1). The concentration of gallic acid in each total fractionations of HY (282.1 g/g) and JY (315.2 g/g) were higher than in total fractionation of SP (143.3 g/g). The concentration of chlorogenic acid contents appeared to be highest in total fractionation of SP (954.2 g/g). The concentration of protocatechuic acid in total fractionation of HY (120.3 g/g) was higher than in each total fractionationss of JY (74.4 g/g) and SP (102.7 g/g). Overall, color-fleshed potatoes had higher amount of physicochemical properties than ‘Superior’. Therefore, color-fleshed potatoes are expected to be highly valuable items for the development and applications of a functional food. In addition, these results will provide fundamental information for improving sitological value, and breeding of new cultivar.

Key words: Color-fleshed potatoes, Tuber, Isolation, Analyze, Phenolic compounds, HPLC