

Morphological Characterization of *Fagopyrum esculentum* Germplasm for Rutin and Quercetin Contents

Muhammad Rauf¹), Yu Mi Choi²), Sukyeung Lee²), Do Yoon Hyun²), Myung-Chul Lee³), Sejong Oh³) and Hyemyeong Yoon²)*

1)Post-doc, 2)Researcher and 3)Senior Researcher, National Agrobiodiversity Center, NAS, RDA, Jeonju, 54874, Rep. of Korea

ABSTRACT

Buckwheat is well-known crop for containing a high contents of flavonoids that are effective in vascular disease. The current study was performed to estimate the influence of morphological characterization of *Fagopyrum esculentum* (ES) germplasm for seed's two major flavonoids contents: rutin and quercetin. We found that the red stem color, pale green leaf color, arrowhead leaf shape, white flower color, pale brown seed coat color, and egg-shaped seed were significantly associated with 77%, 56.7%, 83.7%, 98.7%, 70.8% and 74.5% germplasm, respectively. Overall, the rutin contents of ES germplasm ranged from 0.30 to 47.86 mg/100g dry weight (DW) and the quercetin contents ranged from 0 to 1.22 mg/100g DW. The rutin contents of germplasm possessing red stem color, pale green leaf color, arrowhead leaves, white flower color, pale brown seed coat color and egg-shaped seed ranged from 7.22 to 47.86 mg/100g DW. However, the quercetin contents of germplasm with red stem color and pale brown seed coat color ranged from 0 to 1.15 mg/100g DW, with pale green leaves ranged from 0 to 0.96 mg/100g, with arrowhead leaves and white flower ranged from 0 to 1.22 mg/100g and with egg-shaped seed ranged from 0.32 to 1.22 mg/100g DW. In PCA analysis, the first three principal components (PCs) showed Eigen value more than 1 and accounted for 51.70% of variation. For both higher contents of rutin and quercetin, the morphological evaluation in ES shows a tendency of red stem color, arrowhead leaves, pale green leaf color, white flower color, pale brown seed coat color and egg-shaped seed. From this information, we can assume the rutin and quercetin contents by the morphological characteristics of the germplasm. And It could be useful in improving the rutin and quercetin contents and selecting proper resources for cultivation in existing buckwheat cultivars.

key words: Buckwheat, flavonoids, rutin, quercetin, morphological characterization

*(Corresponding author) E-mail: mmihm@korea.kr Tel: +82-63-238-4870