Polyphenol profiles of barley sprouts at different growth stages and investigation of their antioxidative effects

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This study was the first to investigate polyphenol profiles and antioxidant properties in BS at different growth stages and cultivar. The isolated compounds were identified as 3-O-Feruloylquinic acid, Lutonarin, Saponarin, Isoorientin, Orientin, Isovitexin, Isoscoparin-7-O-[6-sinapoyl]-glucoside, Isoscoparin-7-O-[6-feruloyl]-glucoside, Isovitexin-7-O-[6-sinapoyl]-glucoside and Isovitexin-7-O-[6-feruloyl]-glucoside using UPLC-PDA-ESI/MS analysis. Among them, compound 2-6 had a good ability to reduce free radicals in 1, 1-Diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activities with IC50 values of 20.7-74.9 μM and 2-azino-bis-(3-ethylbenzothiazoline-6-sulphonicacid (ABTS) radical cation scavenging activities with IC50 values of 5.7-32.0 μM (Compared with quercetin as positive control, IC50=26.0 and 23.6 μM, respectively). Furthermore, compound (2, 4 and 5) pre-treatment cells were diminished Reactive Oxygen Species (ROS) and increased cell viability without cytotoxicity. We validate this by showing that saponarin (SA) is as inhibitor of ROS. The richest cultivar for SA was found to be the Keunalbori cultivar. The most abundant SA in barley sprout showed 62-75% of the total polyphenols content at every stage. These results are valuable to determine the optimal times of harvest to obtain the highest yield of polyphenols.

Biography

Woo Duck Seo has completed his PhD from Gyeong Sang National University and Postdoctoral studies from Korea Institute of Radiological & Medical Science. He has published more than 35 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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