

Phenolics content, antioxidant and α -glucosidase inhibitory activity of sprouts of
Fagopyrum esculentum and *F. tartaricum*

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실험목적 (Objectives)

The objective was to evaluate the phenolic content, antioxidant and antidiabetic activity of the sprouts (7 days old) of common and tartary buckwheat that originate from eastern hills of Nepal were studied in a comparative way.

재료 및 방법 (Materials and Methods)

○ 실험재료

1. Estimation of total polyphenol and Total flavonoid content.
2. Antioxidant assay
 - a. DPPH free radical scavenging activity,
 - b. Reducing power assay,
 - d. Total antioxidant capacity
3. Alpha glucosidase activity
4. HPLC analysis

실험결과 (Results)

The result revealed that the 80% ethanolic extract of tartary buckwheat sprout (TBS) had higher total phenolic (93.46 ± 1.5 mg/g GAE dw) and flavonoid (26.93 ± 0.29 mg/g QE) content than common buckwheat sprout (CBS). The data also showed that rutin content in the TBS (31.98 ± 2.03 mg/g dw) was higher than the CBS (3.844 ± 0.36 mg/g dw). Likewise, quercetin and chlorogenic acid contents were also higher (1.597 ± 0.09 and 0.412 ± 0.06 mg/g dw respectively) in TBS than in CBS (0.085 ± 0.04 and 0.272 ± 0.07 mg/g dw respectively). However, the compounds vitexin, isovitexin, orientin and isoorientin were found to be 14.46, 20, 4.15 and 4.9 times higher respectively in the CBS compared to TBS. The evaluation of antioxidant activity done by using the DPPH free radical scavenging assay, and the reducing power assays involving the reduction of ferric to ferrous ions and also the reduction of Mo (VI) to Mo (V) showed that TBS exhibited higher antioxidant activity. In the α -glucosidase inhibition assay, the extracts (0.25 mg/ml) of tartary and common buckwheat sprout showed 80.91 ± 5.34 and 75.65 ± 6.06 % of inhibition respectively.

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Table 1. Total polyphenol content (TPC) and total flavonoid content (TFC) of the sprouts of common and tartary buckwheat.

	TPC (mg/g GAE dw)	TFC (mg/g QE dw)
Common	70.21±2.30	16.62±0.17
Tartary	93.46±1.5	26.931±0.29

Table 2. Quantitative estimation of phenolics (mg/g dw) in the 80% ethanolic extracts of the sprouts of common and tartary buckwheat by HPLC.

Compounds	Common	Tartary
Rutin	3.844±0.364	31.98±2.028
Vitexin	5.812±0.219	0.401±0.070
Isovitexin	3.701±0.172	0.184±0.081
Orientin	3.532±0.084	0.851±0.042
Isoorientin	7.515±0.317	1.526±0.114
Quercetin	0.085±0.031	1.597±0.090
Chlorogenic acid	0.272±0.067	0.412±0.063

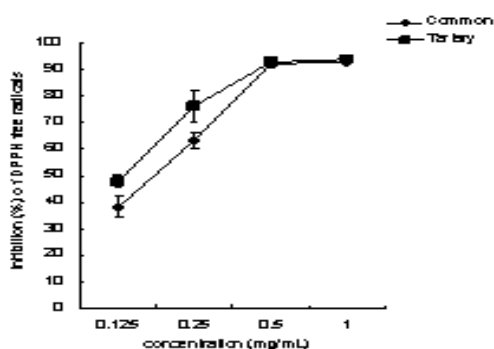


Fig 1. DPPH scavenging activity

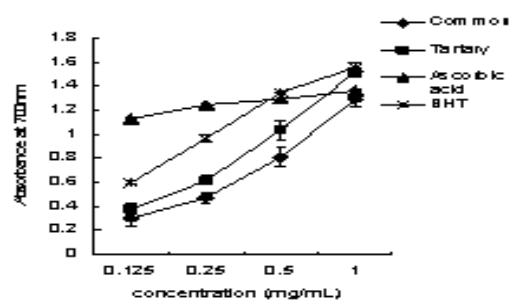


Fig 2. Reducing power

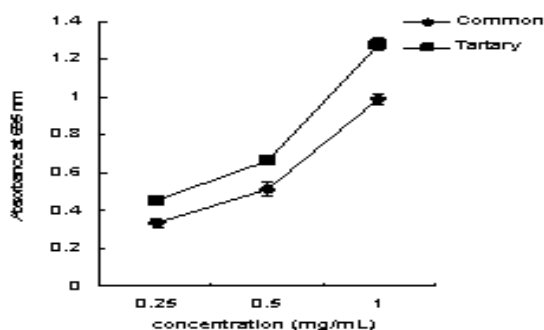


Fig 3. Total antioxidant capacity

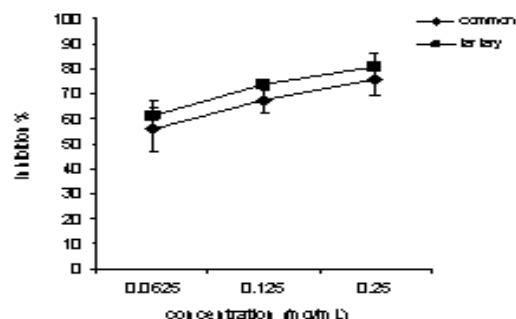


Fig 4. Alpha- glucosidase activity