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Bioactivity and phenolics content in the 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.

Antioxidant assay

a. DPPH free radical scavenging activity,

b. Reducing power assay,

d. Total antioxidant capacity

Alpha glucosidase activity

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 (26.931±0.29mg/g QE) content than common buckwheat sprout (CBS). The data alsorevealed that rutin content in the TBS (31.985±2.028 mg/g dw) was higher than the CBS (3.844±0.364 mg/g dw). Likewise, quercetin and chlorogenic acid contents were also higher (1.597±0.090 and 0.412±0.063 mg/g dw respectively) in TBS than in CBS (0.085±0.042 and 0.272±0.067 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 antidiabetic assay, the extracts (0.25mg/ml) of Tartary and common buckwheat sprout showed 80.91±5.339 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

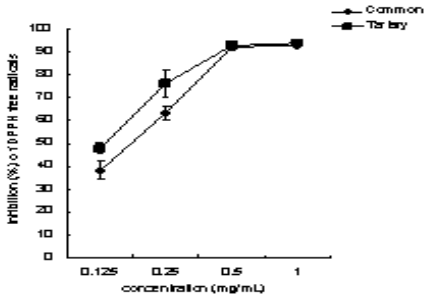

Fig 1. DPPH scavenging activity

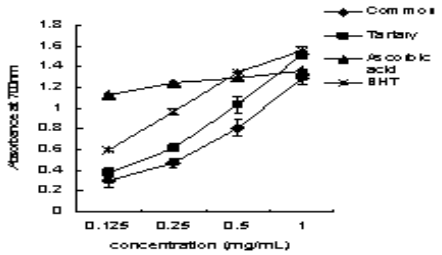

Fig 2. Reducing power

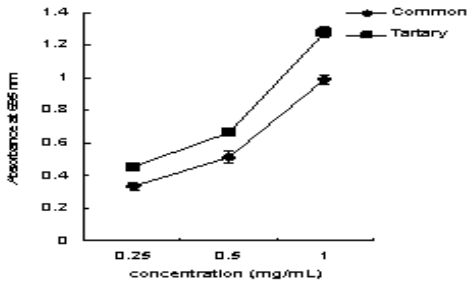

Fig 3. Total antioxidant capacity

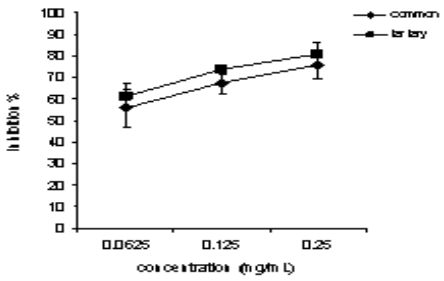

Fig 4. Alpha- glucosidase activity