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Antidiabetic Activities and Anti-oxidants of Seed and Whole Plant of Tartary Buckwheat 'Hwangguem-Miso'

Su Jeong Kim^{1*}, Hwang Bae Sohn¹, Jung Hwan Nam¹, Do Yeon Kim¹, Jong Nam Lee¹, Su Hyung Park¹, Yul Ho Kim²

¹Highland Agriculture Research Institute, National Institute of Crop Science, Rural Development Administration, Pyeongchang 25342, Korea

²Central Area Crop Breeding Division, National Institute of Crop Science, Rural Development Administration, Suwon 16429, Korea

[Introduction]

Buckwheat (*Fagopyrum* spp.) is an annual herbaceous crop, and is known as a health food. The seed and whole plant of buckwheat were evaluated for its antidiabetic potential on normal and streptozotocin (STZ)-induced diabetic rats.

[Materials and Methods]

For the experiments, the diabetic animal models in STZ-induced diabetic rats were divided into 4 groups: normal mice group, streptozotocin-induced diabetic mice group (STZ), mice group fed seeds of common buckwheat or tartary buckwheat, and mice group fed whole plant of common buckwheat or tartary buckwheat. In the chronic model, the aqueous extract was administered to normal and STZ-induced diabetic rats at the doses of 100 mg/kg body weight per day for 4 weeks. The fasting blood glucose levels, oral glucose level, serum insulin level and biochemical data such as homeostasis model assessment of insulin resistance (HOMA-IR) were evaluated and compared with that of the known anti-diabetic mice group.

[Results and Discussion]

Rutin content of tartary buckwheat 'Hwangguem-Miso' was 44-48 times higher than that of common buckwheat, and the flavonoid and polyphenol contents were also 2.5-4.8 times higher than those of common buckwheat. The mice group fed tartary buckwheat group showed significant decrease in blood glucose, serum glucose and HOMA-IR when compared with the STZ group. Thus the seed and whole plant of tartary buckwheat had beneficial effects in reducing the elevated blood glucose level and insulin tolerance of STZ-induced diabetic rats. The results suggest that high rutin content and antioxidant activity in tartary buckwheat are closely related with the anti-diabetes effect. The cultivar 'Hwangguem-Miso' have anti-diabetic effects that attenuate blood glucose in the animal model of type II diabetes and might be useful as a functional diet for human diabetic diseases.

[Acknowledgement]

This study was supported by joint research project from Rural Development Administration, Republic of Korea (Project number PJ01606803)

*Corresponding author: E-mail, sjkim30@korea.kr Tel. +82-33-330-1840