Study of Antioxidant and Antiallergic Activity of Sweet Potatoes (*Ipomoea batatas*) Peel

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ABSTRACT

Sweet potato (*Ipomoea batatas*) is one of the sixth most important food crop in the world. Both peel and flesh has been reported contains full of nutrition and high phytochemical such as high phenolic compound. Therefore, sweet potato is a potential source to maintain human health. The health effect of sweet potato peel in immunology as antiallergic has not been reported. In the present study, the antioxidant and antiallergic activity of sweet potato peels extract using degranulation of RBL-2H3 cell assay was evaluated. Four cultivar of Japanese sweet potatoes peel was extracted using QuEChERS method. The extract was analyzed for total phenolic content, total flavonoid content, antioxidant activity using DPPH scavenging activity, and antiallergic activity using degranulation of RBL-2H3 cell assay. Liquid-liquid extraction was done to determine the active compound for antiallergic activity. The results showed that sweet potato peel extracts have total phenolics content in sweet potato peel ranged from 16.71 to 48.91 mg GAE/g dry weight, total flavonoid content ranged from 3.37 to 10.61 mg QE/g dry weight, and IC50 value of DPPH scavenging activity ranged 44.04 to 182.89 μg/ml of sweet potato peel extract and exhibited antiallergic activity. Sweet potato var Narutokintoki peel extract inhibited β-hexosaminidase release and have the highest antioxidant activity compared to another cultivars. Caffeic acid observed by HPLC analysis was supposed as the substance, which responsible for the antiallergic potential found in sweet potato peel var *Narutokintoki*.

Keywords: Sweet potato peel; Antiallergic activity; Antioxidant; RBL-2H3 cell.

Studi Aktivitas Antioksidan dan Antialergi dari Kulit Ubi Jalar (*Ipomoea Batatas*)

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Abstrak

Ubi jalar (*Ipomoea batatas*) merupakan salah satu dari hasil pertanian penting keenam di dunia. Baik kulit dan umbi dilaporkan memiliki nutrisi yang tinggi serta memiliki kandungan fitokimia seperti fenolik yang tinggi. Sehingga, ubi jalar merupakan sumber yang potensial untuk menjaga kesehatan manusia. Pengaruh kesehatan kulit ubi jalar pada imunitas seperti antiallergi belum pernah dilaporkan. Dalam penelitian ini, aktivitas antioksidan dan antialergi dari ekstrak kulit ubi jalar dievaluasi. Empat jenis kulit ubi jalar Jepang diekstrak dengan menggunakan metode QuEChERS. Ekstrak kemudian dianlisa kandungan total fenolik, total flavonoid, aktivitas antioksidan dengan menggunakan DPPH, dan aktivitas antialergi dengan menggunakan uji degranulasi dari sel RBL-2H3. Hasil menunjukan bahwa ekstrak kulit ubi jalar memiliki kandungan total fenolik yang bervariasi yaitu 16,81-48,91 mg GAE/g berat kering, kandungan total flavonoid sebesar 3,37-10,61 mg QE/g berat kering, dan aktivitas penghambatan DPPH dengan IC50 sebesar 44,04-182,89 ug/ml ekstrak kulit ubi jalar dan mampu menghambat aktivitas antiallergi. Ekstrak kulit ubi jalar varietas *Narutokintoki* mampu menghambat pelepasan b-hexosaminidase dan memiliki aktivitas antioksidan tertinggi dibandingkan jenis lain. Asam Kafeat yang diamati dengan analisa HPLC diperkirakan sebagai substansi yang berperan dalam aktivitas antialergi yang ditemukan pada kulit ubi jalar varietas *Narutokintoki*.

Kata kunci: Kulit ubi jalar; aktivitas antioksidan; aktivitas antialergi; Sel RBL-2H3