Antioxidant and alpha-Glucosidase Inhibitory Activities and Gas Chromatography-Mass Spectrometry Profile of Salak (Salacca zalacca) Fruit Peel Extracts

By: Saleh, MSM (Saleh, Mohammed S. M.)[1]; Siddiqui, MJ (Siddiqui, Mohammad Jamshed)[1]; So'ad, SZM (So'ad, Siti Z. Mat)[1]; Murugesu, S (Murugesu, Suganya)[1]; Khatib, A (Khatib, Alfi)[1]; Rahman, MM (Rahman, Mokhlesur M.)[2]

View ResearcherID and ORCID

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Abstract

Background: Salacca zalacca or better known as salak fruit is widely distributed in tropical and subtropical countries, and it is traditionally used to treat diabetes. This study was aimed to investigate the salak peel extracts for their biological and chemical activities. Also, the chemical profile of the most promising extract was analysed on gas chromatography-mass spectrometry (GC-MS). Materials and Methods: The peel extracts were prepared by maceration process at room temperature with different ratio of ethanol/water. All the extracts were determined for their alpha-glucosidase inhibitory activity using a-glucosidase enzyme. The antioxidant activities of the extracts were determined through their Ferric reducing antioxidant power assay (FRAP) and 2,2-diphenyl-1picrylhydrazyl (DPPH). The chemical constituents of salak peel extracts were analysed using gas chromatography-mass spectrometry (GC MS). Results: Phytochemical screening showed the presence of phenolic and flavonoid contents in all the extracts. About 100% ethanol extract shows the highest phenolic content (116.70 +/- 0.764 mu g/mL) while 60% ethanol extract has the lowest content 18.65 +/- 1.155 mu g/ml using gallic acid as a reference. 100% ethanol extract was observed to exhibit highest radical scavenging, ferric reducing antioxidant power (FRAP), and alpha-glucosidase inhibitory activities (IC50 : 49.45 +/- 3.87 mu g/mL, 144.81 +/- 3.72 mu g AAE/g, IC50 : 11.62 +/- 0.67b mu g/mL), respectively. Water extracts had the lowest FRAP, radical scavenging activity as well as alpha-glucosidase activity. The phytochemical investigation on GC-MS showed the presence of active compounds in salak fruit peel extracts. Conclusion: Salak fruit peels showed the highest antioxidant as well as alpha-glucosidase inhibitory activities. Phytochemical analysis on GC-MS confirms the presence of gallic acid, linoelaidic acid, palmitic acid, alpha-tocopherol, and steric acid which may contribute to alpha-glucosidase inhibitory activity.

Keywords

Author Keywords: Antioxidant; phytochemical screening; Salak fruit; total phenolic; alpha-glucosidase inhibitory activity
KeyWords Plus: SNAKE; ACID; IDENTIFICATION; PHENOLICS; ENZYMES

Author Information

Reprint Address: Siddiqui, MJ (reprint author)

+ Int Islamic Univ Malaysia, Dept Pharmaceut Chem, Kulliyyah Pharm, Kuantan 25200, Pahang, Malaysia.

Addresses:

+ [1] Int Islamic Univ Malaysia, Dept Pharmaceut Chem, Kulliyyah Pharm, Kuantan 25200, Pahang, Malaysia

+ [2] Univ Sultan Zainal Abidin, Inst Community Hlth Dev & Qual Life, Kuala Nerus, Terengganu, Malaysia

E-mail Addresses: jamshed_siddiqui@iium.edu.my

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