Close

Web of Science
Page 1 (Records 1 -- 1)
[1]

Print

Record 1 of 1

Title: Evaluation of the Enzyme Inhibitory and Antioxidant Activities of Entada spiralis Stem Bark and Isolation of the Active Constituents

Author(s): Roheem, FO (Roheem, Fatimah Opeyemi); Soad, SZM (Soad, Siti Zaiton Mat); Ahmed, QU (Ahmed, Qamar Uddin); Shah, SAA (Shah, Syed Adnan Ali); Latip, J (Latip, Jalifah); Zakaria, ZA (Zakaria, Zainul Amiruddin)

Source: MOLECULES **Volume:** 24 **Issue:** 6 **Article Number:** 1006 **DOI:** 10.3390/molecules24061006 **Published:** MAR 2 2019

Cited Reference Count: 46

Abstract: Digestive enzymes and free radical inhibitors are used to prevent complications resulting from diabetes. Entada spiralis (family Leguminosae), which is a well-known medicinal plant in herbal medicine due to its various traditional and medicinal applications, was studied. Crude extracts were successively obtained from the stem bark using petroleum ether, chloroform and methanol as extracting solvents. The antioxidant activity of all the extracts, fractions and isolated compounds were estimated using 2,2-diphenyl-1-picrylhydrazyl (DPPH), -carotene and 2,2-azinobis(-3-ethylbenzothiazine-6-sulfonic acid) (ABTS) assays, while digestive enzymes inhibitory activity was assessed using -amylase and -glucosidase inhibitory methods. Structure elucidation of pure compounds was achieved through different spectroscopic analysis methods. Fractionation and purification of the most active methanol extract resulted in the isolation of a ferulic ester namely; (e)-hexyl 3-(4-hydroxy-3-methoxyphenyl) acrylate (FEQ-2) together with five known phenolic constituents, identified as kaempferol (FEQ-3), 5,4-dihydroxy-3,7,3-trimethoxyflavone (FEQ-2), gallic acid (FEQ-5), (+)-catechin (FEQ-7) and (-)-epicatechin (FEQ-8). FEQ-5 exhibited the strongest antioxidant and enzyme inhibitory activities followed by FEQ-3 and FEQ-4. FEQ-2 also displayed potent free radical scavenging activity with IC50 values of 13.79 +/- 2.13 (DPPH) and 4.69 +/- 1.25 (ABTS) mu g/mL, respectively. All other compounds were found active either against free radicals or digestive enzymes.

Accession Number: WOS:000465503800006

PubMed ID: 30871172

Language: English

Document Type: Article

Author Keywords: Entada spiralis; 2,2-diphenyl-1-picrylhydrazyl assay; beta-carotene assay; 2,2 '-azinobis(-3-ethylbenzothiazine-6-sulfonic acid) assay; alpha-amylase; alpha-glucosidase; active principles

KeyWords Plus: ALPHA-GLUCOSIDASE; IN-VITRO; AMYLASE; PLANTS

Addresses: [Roheem, Fatimah Opeyemi; Soad, Siti Zaiton Mat; Ahmed, Qamar Uddin] Int Islamic Univ Malaysia, Dept Pharmaceut Chem, Kuantan 25200, Pahang Dm, Malaysia.
[Shah, Syed Adnan Ali] Univ Teknol MARA, Atta ur Rahman Inst Nat Prod Discovery AuRIns, Bandar Puncak Alam 42300, Selangor Darul, Malaysia.
[Shah, Syed Adnan Ali] Univ Teknol MARA, Fac Pharm, Puncak Alam Campus, Bandar Puncak Alam 42300, Selangor De, Malaysia.
[Latip, Jalifah] Univ Kebangsaan Malaysia, Sch Chem Sci & Food Technol, Fac Sci & Technol, Bandar Baru Bangi 43600, Selangor, Malaysia.
[Zakaria, Zainul Amiruddin] Univ Putra Malaysia, Dept Biomed Sci, Fac Med & Hlth Sci, Serdang 43400, Selangor, Malaysia.
[Zakaria, Zainul Amiruddin] Univ Putra Malaysia, Halal Inst Res Inst, Serdang 43400, Selangor, Malaysia.

Reprint Address: Soad, SZM (reprint author), Int Islamic Univ Malaysia, Dept Pharmaceut Chem, Kuantan 25200, Pahang Dm, Malaysia.
Zakaria, ZA (reprint author), Univ Putra Malaysia, Dept Biomed Sci, Fac Med & Hlth Sci, Serdang 43400, Selangor, Malaysia.
Zakaria, ZA (reprint author), Univ Putra Malaysia, Halal Inst Res Inst, Serdang 43400, Selangor, Malaysia.

E-mail Addresses: bukolami_fatty@yahoo.com; dszaiton@iium.edu.my; quahmed@iium.edu.my; benzene301@yahoo.com; jalifah@ukm.edu.my; zaz@upm.edu.my

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
SHAH, SYED ADNAN	M-3567-2019	0000-0002-8142-5013

Publisher: MDPI

Publisher Address: ST ALBAN-ANLAGE 66, CH-4052 BASEL, SWITZERLAND

Web of Science Categories: Biochemistry & Molecular Biology; Chemistry, Multidisciplinary

Research Areas: Biochemistry & Molecular Biology; Chemistry

IDS Number: HU8AD

ISSN: 1420-3049

29-char Source Abbrev.: MOLECULES

ISO Source Abbrev.: Molecules

Source Item Page Count: 15

Funding:

Funding Agency	Grant Number
Ministry of Higher Education (MOHE), Malaysia	FRGS 16-042-0541
Research Management Centre, IIUM	RIGS 16-294-0458

This research was funded by the Ministry of Higher Education (MOHE), Malaysia and Research Management Centre, IIUM in the form of Fundamental Grant Research Scheme (FRGS 16-042-0541) and Research Initiative Grant Schemes (RIGS 16-294-0458), respectively.

Open Access: DOAJ Gold, Green Published

Output Date: 2019-08-01

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Web of Science
Page 1 (Records 1 -- 1)
[1]

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