



< Back to results | < Previous 20 of 496 Next >

Export Download Print E-mail Save to PDF Add to List More... >

International Food Research Journal • Volume 29, Issue 1, Pages 58 - 66 • 2022

Document type

Article

Source type

Journal

ISSN

19854668

Publisher

Universiti Putra Malaysia

Original language

English

View less

Correlation of the GC-MS-based metabolite profile of *Momordica charantia* fruit and its antioxidant activity

[Perumal V.^a](#); [Khatib A.^{b,f}](#) ; [Ahmed Q.U.^b](#); [Uzir B.F.^b](#); [Abas F.^c](#); [Murugesu S.^d](#); [Saiman M.Z.^e](#); [Primaharinastiti R.^f](#); [El-Seedi H.^{g,h,i}](#)

Save all to author list

^a Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, Perak, Ipoh, 30450, Malaysia

^b Department of Pharmaceutical Chemistry, Kulliyah of Pharmacy, International Islamic University Malaysia, Pahang Darul Makmur, Kuantan, 25200, Malaysia

^c Laboratory of Natural Products, Institute of Bioscience, Universiti Putra Malaysia, UPM Serdang, Selangor Darul Ehsan, 43400, Malaysia

^d Laboratory of Food Safety and Food Integrity, Institute of Tropical Agriculture and Food Security, Universiti Putra Malaysia, UPM Serdang, Selangor Darul Ehsan, 43400, Malaysia

^e Institute of Biological Sciences, Faculty of Science, University of Malaya, Kuala Lumpur, 50603, Malaysia

^f Faculty of Pharmacy, Airlangga University, Surabaya, 60155, Indonesia

^g Department of Molecular Biosciences, The Wenner-Gren Institute, Stockholm University, Stockholm, 106 91, Sweden

^h Department of Chemistry, Faculty of Science, Menoufia University, Shebin El-Kom, 32512, Egypt

ⁱ International Research Center for Food Nutrition and Safety, Jiangu University, Zhenjiang, 212013, China

Hide additional affiliations

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

Related documents

Antioxidants profile of *Momordica charantia* fruit extract analyzed using LC-MS-QTOF-based metabolomics

Perumal, V. , Khatib, A. , Uddin Ahmed, Q. (2021) *Food Chemistry: Molecular Sciences*

Metabolomics-based profiling with chemometric approach to identify bioactive compounds in *Salacca zalacca* fruits extracts and in silico molecular docking

Saleh, M.S.M. , Siddiqui, M.J. , Alshweh, H.A. (2021) *Arabian Journal of Chemistry*

Characterization of Antioxidant Activity of *Momordica Charantia* Fruit by Infrared-Based Fingerprinting

Khatib, A. , Perumal, V. , Ahmed, Q.U. (2017) *Analytical Letters*

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

Full text options

[Abstract](#)

[Author keywords](#)

[Reaxys Chemistry database information](#)

Abstract

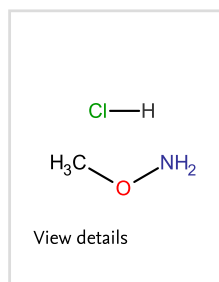
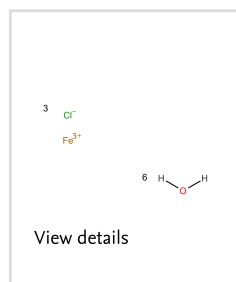
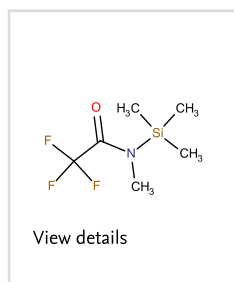
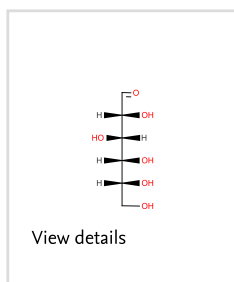
Momordica charantia or bitter melon (Cucurbitaceae) is a widely consumed edible fruit with strong antioxidant properties. Due to these properties, it has been commercialised by the natural product industries as a coadjutant in the treatment of various ailments attributable to the deleterious effects of oxidants. The present work aimed to evaluate the antioxidant activity of *M. charantia* fruit extracts made with different compositions of ethanol:water, and to identify the metabolites that are responsible for this activity. To this end, the fruit samples were extracted using six different concentrations of ethanol in water (0, 20, 40, 60, 80, and 100%). Gas chromatography-mass spectrometry (GC-MS) and multivariate data analysis (MVDA) were used to identify significant antioxidants. The 80% ethanol:water extract showed the most significant ($p < 0.05$) antioxidant activity when tested with the 1, 1-diphenyl-2-picrylhydrazyl (DPPH) and ferric reducing antioxidant power (FRAP) antioxidant assays. The multivariate data analysis revealed that the metabolites related to this antioxidant activity were gentiobiose, glucose, galactonic acid, palmitic acid, galactose, mannose, and fructose © 2022,International Food Research Journal.All Rights Reserved

Author keywords

Antioxidants; Dpph; Frap; Metabolomics; Momordica charantia

Reaxys Chemistry database information [i](#)

Substances

[View all substances \(10\)](#)Powered by [Reaxys](#)[SciVal Topics](#) [i](#)[Metrics](#)[Funding details](#)

References (26)

[View in search results format >](#) All[Export](#)[Print](#)[E-mail](#)[Save to PDF](#)[Create bibliography](#)

- 1 Alhadramy, M.S.
Diabetes and oral therapies: A review of oral therapies for diabetes mellitus ([Open Access](#))

(2016) *Journal of Taibah University Medical Sciences*, 11 (4), pp. 317-329. Cited 30 times.
<http://www.elsevier.com/journals/journal-of-taibah-university-medical-sciences/1658-3612>
doi: 10.1016/j.jtumed.2016.02.001

View at Publisher
-
- 2 Ansari, N.A., Dash, D.
Amadori glycated proteins: Role in production of autoantibodies in diabetes mellitus and effect of inhibitors on non-enzymatic glycation

(2013) *Aging and Disease*, 4 (1), pp. 50-56. Cited 41 times.
<http://www.aginganddisease.org/AD-2013-Ansari.pdf>
-
- 3 Ashari, L.S., Mitra, A.K., Rahman, T.A., Mitra, A., Teh, L.K., Salleh, M.Z., Jan Mohamed, H.J.B.
Prevalence and risk factors of metabolic syndrome among an endangered tribal population in Malaysia using harmonized IDF criteria

(2016) *International Journal of Diabetes in Developing Countries*, 36 (3), pp. 352-358. Cited 10 times.
<http://www.springerlink.com/content/0973-3930/>
doi: 10.1007/s13410-016-0487-4

View at Publisher
-
- 4 Broad, R.C., Bonneau, J.P., Hellens, R.P., Johnson, A.A.T.
Manipulation of ascorbate biosynthetic, recycling, and regulatory pathways for improved abiotic stress tolerance in plants ([Open Access](#))

(2020) *International Journal of Molecular Sciences*, 21 (5), art. no. 1790. Cited 19 times.
<https://www.mdpi.com/1422-0067/21/5/1790/pdf>
doi: 10.3390/ijms21051790

View at Publisher
-
- 5 Bujak, R., Dagher-Wojtkowiak, E., Kaliszan, R., Markuszewski, M.J.
PLS-based and regularization-based methods for the selection of relevant variables in non-targeted metabolomics data ([Open Access](#))

(2016) *Frontiers in Molecular Biosciences*, 3 (JUL), art. no. 35. Cited 21 times.
<https://www.frontiersin.org/articles/10.3389/fmolb.2016.00035/full>
doi: 10.3389/fmolb.2016.00035

View at Publisher
-

- 6 Priya Dharshini, L.C., Vishnupriya, S., Sakthivel, K.M., Rasmi, R.R.
Oxidative stress responsive transcription factors in cellular signalling transduction mechanisms

(2020) *Cellular Signalling*, 72, art. no. 109670. Cited 11 times.

www.elsevier.com/locate/cellsig
doi: 10.1016/j.cellsig.2020.109670

View at Publisher

- 7 Diaz-Vivancos, P., De Simone, A., Kiddle, G., Foyer, C.H.
Glutathione - Linking cell proliferation to oxidative stress
(Open Access)

(2015) *Free Radical Biology and Medicine*, 89, pp. 1154-1164. Cited 163 times.

www.elsevier.com/locate/freeradbiomed
doi: 10.1016/j.freeradbiomed.2015.09.023

View at Publisher

- 8 Duan, G.-L., Yu, X.-B.
Isolation, purification, characterization, and antioxidant activity of low-molecular-weight polysaccharides from *Sparassis latifolia*

(2019) *International Journal of Biological Macromolecules*, 137, pp. 1112-1120. Cited 33 times.

www.elsevier.com/locate/ijbiomac
doi: 10.1016/j.ijbiomac.2019.06.177

View at Publisher

- 9 Fernandes, A.S., Mello, F.V.C., Thode Filho, S., Carpes, R.M., Honório, J.G., Marques, M.R.C., Felzenszwalb, I., (...), Ferraz, E.R.A.
Impacts of discarded coffee waste on human and environmental health

(2017) *Ecotoxicology and Environmental Safety*, 141, pp. 30-36. Cited 41 times.

<http://www.elsevier.com/inca/publications/store/6/2/2/8/1/9/index.htm>
doi: 10.1016/j.ecoenv.2017.03.011

View at Publisher

- 10 Gao, H., Wen, J.-J., Hu, J.-L., Nie, Q.-X., Chen, H.-H., Xiong, T., Nie, S.-P., (...), Xie, M.-Y.
Polysaccharide from fermented *Momordica charantia* L. with *Lactobacillus plantarum* NCU116 ameliorates type 2 diabetes in rats

(2018) *Carbohydrate Polymers*, 201, pp. 624-633. Cited 56 times.

http://www.elsevier.com/wps/find/journaldescription.cws_home/405871/description#description

doi: 10.1016/j.carbpol.2018.08.075

View at Publisher

- 11 Javadi, N., Abas, F., Hamid, A.A., Simoh, S., Shaari, K., Ismail, I.S., Mediani, A., (...), Khatib, A.
GC-MS-Based Metabolite Profiling of *Cosmos caudatus* Leaves Possessing Alpha-Glucosidase Inhibitory Activity
(2014) *Journal of Food Science*, 79 (6), pp. C1130-C1136. Cited 56 times.
<http://www3.interscience.wiley.com/journal/118509799/issueyear?year=2008>
doi: 10.1111/1750-3841.12491
View at Publisher
-
- 12 Karthivashan, G., Tangestani Fard, M., Arulselvan, P., Abas, F., Fakurazi, S.
Identification of bioactive candidate compounds responsible for oxidative challenge from hydro-ethanolic extract of moringa oleifera leaves
(2013) *Journal of Food Science*, 78 (9), pp. C1368-C1375. Cited 47 times.
doi: 10.1111/1750-3841.12233
View at Publisher
-
- 13 Kim, M.H., Seong, J.B., Huh, J.-W., Bae, Y.C., Lee, H.-S., Lee, D.-S.
Peroxiredoxin 5 ameliorates obesity-induced non-alcoholic fatty liver disease through the regulation of oxidative stress and AMP-activated protein kinase signaling (Open Access)
(2020) *Redox Biology*, 28, art. no. 101315. Cited 32 times.
<http://www.journals.elsevier.com/redox-biology>
doi: 10.1016/j.redox.2019.101315
View at Publisher
-
- 14 Kuhlisch, C., Pohnert, G.
Metabolomics in chemical ecology (Open Access)
(2015) *Natural Product Reports*, 32 (7), pp. 937-955. Cited 81 times.
<http://pubs.rsc.org/en/journals/journal/np>
doi: 10.1039/c5np00003c
View at Publisher
-
- 15 Murugesu, S., Ibrahim, Z., Ahmed, Q.-U., Yusoff, N.-I.N., Uzir, B.-F., Perumal, V., Abas, F., (...), Khatib, A.
Characterization of β -glucosidase inhibitors from clinacanthus nutans lindau leaves by gas chromatography-mass spectrometry-based metabolomics and molecular docking simulation (Open Access)
(2018) *Molecules*, 23 (9), art. no. 2402. Cited 35 times.
<http://www.mdpi.com/1420-3049/23/9/2402/pdf>
doi: 10.3390/molecules23092402
View at Publisher
-
- 16 Omar, T. A., Salimon, J.
Validation and application of a gas chromatographic method for determining fatty acids and trans fats in some bakery products
(2013) *Journal of Taibah University for Science*, 7 (2), pp. 56-63. Cited 6 times.

- 17 Qader, S.W., Abdulla, M.A., Chua, L.S., Najim, N., Zain, M.M., Hamdan, S.
Antioxidant, total phenolic content and cytotoxicity evaluation of selected Malaysian plants ([Open Access](#))
- (2011) *Molecules*, 16 (4), pp. 3433-3443. Cited 132 times.
<http://www.mdpi.com/1420-3049/16/4/3433/pdf>
doi: 10.3390/molecules16043433
- [View at Publisher](#)
-
- 18 Sethi, S., Joshi, A., Arora, B., Bhowmik, A., Sharma, R.R., Kumar, P.
Significance of FRAP, DPPH, and CUPRAC assays for antioxidant activity determination in apple fruit extracts
- (2020) *European Food Research and Technology*, 246 (3), pp. 591-598. Cited 46 times.
<http://link.springer.de/link/service/journals/00217/index.htm>
doi: 10.1007/s00217-020-03432-z
- [View at Publisher](#)
-
- 19 Stettin, D., Poulin, R.X., Pohnert, G.
Metabolomics benefits from orbitrap GC–MS—comparison of low-and high-resolution GC–MS ([Open Access](#))
- (2020) *Metabolites*, 10 (4), art. no. 143. Cited 18 times.
<https://www.mdpi.com/2218-1989/10/4/143/pdf>
doi: 10.3390/metabo10040143
- [View at Publisher](#)
-
- 20 Szydłowska-Czerniak, A., Trokowski, K., Karlovits, G., Szłyk, E.
Effect of refining processes on antioxidant capacity, total contents of phenolics and carotenoids in palm oils
- (2011) *Food Chemistry*, 129 (3), pp. 1187-1192. Cited 92 times.
doi: 10.1016/j.foodchem.2011.05.101
- [View at Publisher](#)
-
- 21 Veljovic-Jovanovic, S., Vidovic, M., Morina, F.
Ascorbate as a key player in plant abiotic stress response and tolerance
- (2018) *Ascorbic Acid in Plant Growth, Development and Stress Tolerance*, pp. 47-109. Cited 8 times.
<http://www.springer.com/in/book/9783319740560>
ISBN: 978-331974057-7; 978-331974056-0
doi: 10.1007/978-3-319-74057-7_3
- [View at Publisher](#)
-
- 22 Wang, X., Liu, J.Z., Hu, J.X., Wu, H., Li, Y.L., Chen, H.L., Bai, H., (...), Hai, C.X.
ROS-activated p³⁸ MAPK/ERK-Akt cascade plays a central role in palmitic acid-stimulated hepatocyte proliferation
- (2011) *Free Radical Biology and Medicine*, 51 (2), pp. 539-551. Cited 109 times.
doi: 10.1016/j.freeradbiomed.2011.04.019
- [View at Publisher](#)
-

□ 23 Worley, B., Powers, R.
PCA as a practical indicator of OPLS-DA model reliability
(2016) *Current Metabolomics*, 4 (2), pp. 97-103. Cited 146 times.

□ 24 Yang, P., Feng, J., Peng, Q., Liu, X., Fan, Z., Luca, M.
Advanced Glycation End Products: Potential Mechanism and
Therapeutic Target in Cardiovascular Complications under
Diabetes (Open Access)

(2019) *Oxidative Medicine and Cellular Longevity*, 2019, art. no.
9570616. Cited 41 times.

<http://www.hindawi.com/journals/oximed/>

doi: 10.1155/2019/9570616

[View at Publisher](#)

□ 25 Yaribeygi, H., Atkin, S.L., Sahebkar, A.
A review of the molecular mechanisms of hyperglycemia-
induced free radical generation leading to oxidative stress

(2019) *Journal of Cellular Physiology*, 234 (2), pp. 1300-1312. Cited 86 times.

[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1097-4652](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1097-4652)

doi: 10.1002/jcp.27164

[View at Publisher](#)

□ 26 Zhu, R., Zhang, X., Wang, Y., Zhang, L., Zhao, J., Chen, G., Fan, J., (...), Ning, C.

Characterization of polysaccharide fractions from fruit of
Actinidia arguta and assessment of their antioxidant and
antiglycated activities

(2019) *Carbohydrate Polymers*, 210, pp. 73-84. Cited 84 times.

http://www.elsevier.com/wps/find/journaldescription.cws_home/405871/description#description

doi: 10.1016/j.carbpol.2019.01.037

[View at Publisher](#)

✉ Khatib, A.; Department of Pharmaceutical Chemistry, Kulliyah of Pharmacy ,
International Islamic University Malaysia , Pahang Darul Makmur, Kuantan,
Malaysia ; email:alfikhatib@iiu.edu.my

© Copyright 2022 Elsevier B.V., All rights reserved.

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語版を表示する](#)

[查看简体中文版本](#)

[查看繁體中文版本](#)

[Просмотр версии на русском языке](#)

Customer Service

[Help](#)

[Tutorials](#)

[Contact us](#)

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗

Copyright © [Elsevier B.V.](#) ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the [use of cookies](#) ↗.

