



Document details

[Back to results](#) | 1 of 3 [Next](#) >[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More...](#) >Journal of International Dental and Medical Research [Open Access](#)
Volume 13, Issue 3, 2020, Pages 903-908Mechanism of antifungal activity of virgin coconut oil on cell membrane of *Candida albicans* (Article)Mukhtar, N.I.^a, Abllah, Z.^b , Mohamad, A.N.^a, Shahdan, I.A.^c, Haron, U.A.^a ^aDepartment of Biotechnology, Kulliyah of Science, International Islamic University Malaysia, Kuantan, Pahang, 25200, Malaysia^bDepartment of Paediatric Dentistry and Dental Public Health, Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Pahang, 25200, Malaysia^cDepartment of Biomedical Sciences, Kulliyah of Allied Health Sciences, International Islamic University Malaysia, Kuantan, Pahang, 25200, Malaysia

Abstract

[View references \(24\)](#)

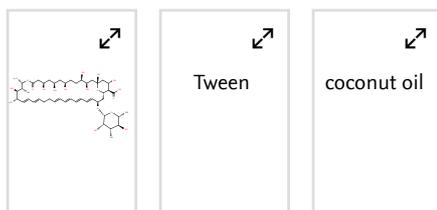
Oral candidiasis is typically caused by diploid yeast, *Candida albicans* through the colonization of the yeast which may cause oral tissue damage and tissue invasion. The limitation of antifungal drugs such as problem with resistance development has led researchers to investigate the potential use of natural product as new target for antifungal drug development. The aim of this study is to identify the components cytoplasmic release and the morphology of *C. albicans* in the presence of activated virgin coconut oil (AVCO) and the crude extract of virgin coconut oil (VCO). The fungal suspensions were treated with AVCO and VCO while nystatin and 1% Tween were used as a positive and a negative control respectively. Treatment with AVCO has caused disruption of the cell membrane of *C. albicans* which leads to the leakage of the cytoplasmic contents while treatment with VCO which did not show any changes on the cell membrane of *C. albicans* after 4 h of exposure. Our results suggest the potential use of AVCO as a novel antifungal agent to control oral candidiasis and it is likely to become an alternative for conventional drugs available in the market. © 2020, University of Dicle.

SciVal Topic Prominence 

Topic: Monolaurin | Monoacylglycerols | Coconut Oil

Prominence percentile: 79.605 Chemistry database information 

Substances



Author keywords

[Activated virgin coconut oil](#) [Antifungal activity](#) [Candida albicans](#) [Coconut oil](#) [Oral candidiasis](#)

Funding details

Funding text

Metrics  [View all metrics](#) >PlumX Metrics Usage, Captures, Mentions,
Social Media and Citations
beyond Scopus.

Cited by 0 documents

Inform me when this document
is cited in Scopus:[Set citation alert](#) >

Related documents

Antibacterial effects of fermented
and cold press VCO against
aggregatibacter
actinomycetemcomitans and
porphyromonas gingivalisAyob, Y. , Al Bayaty, F.H. ,
Hidayat, F.H.
(2020) *Journal of International
Dental and Medical Research*Assessment of sensitivity of
selected *Candida* strains on
antimicrobial photodynamic
therapy using diode laser 635 nm
and toluidine blue – In vitro
researchWiench, R. , Skaba, D. , Stefanik,
N.
(2019) *Photodiagnosis and
Photodynamic Therapy*Optimization and comparison of
GC-FID and HPLC-ELSD
methods for determination of
lauric acid, mono-, di-, and
trilaurins in modified coconut oilPonphaiboon, J. , Limmatvapirat,
S. , Chaidedgumjorn, A.
(2018) *Journal of
Chromatography B: Analytical
Technologies in the Biomedical
and Life Sciences*[View all related documents based
on references](#)[Find more related documents in
Scopus based on:](#)

ISSN: 1309100X
Source Type: Journal
Original language: English

Document Type: Article
Publisher: University of Dicle

References (24)

[View in search results format >](#)

All | [Export](#) [Print](#) [E-mail](#) [Save to PDF](#) [Create bibliography](#)

1 Akpan, A., Morgan, R.

Oral candidiasis ([Open Access](#))

(2002) *Postgraduate Medical Journal*, 78 (922), pp. 455-459. Cited 343 times.
doi: 10.1136/pmj.78.922.455

[View at Publisher](#)

2 Kriswandini, I.L., Oki, A.S., Budi, H.S.

Absorbance thickness in the formation of biofilm produced by *Candida albicans* due to glucose, lactose, protein (soy) and iron induction

(2019) *Journal of International Dental and Medical Research*, (4), pp. 1305-1309.
http://www.jidmr.com/journal/wp-content/uploads/2019/12/12.D18_797_indah_listiana_kriswandini.pdf

3 Singh, A., Verma, R., Murari, A., Agrawal, A.

Oral candidiasis: An overview

(2014) *Journal of Oral and Maxillofacial Pathology*, 18 (5), pp. 81-85. Cited 84 times.
<http://www.jomfp.in/>
doi: 10.4103/0973-029X.141325

[View at Publisher](#)

4 Giannini, P.J., Shetty, K.V.

Diagnosis and management of oral candidiasis

(2011) *Otolaryngologic Clinics of North America*, 44 (1), pp. 231-240. Cited 32 times.
doi: 10.1016/j.otc.2010.09.010

[View at Publisher](#)

5 Sasidharan, S., Zuraini, Z., Latha, L.Y., Suryani, S.

Fungicidal effect and oral acute toxicity of *Psophocarpus tetragonolobus* root extract

(2008) *Pharmaceutical Biology*, 46 (4), pp. 261-265. Cited 11 times.
doi: 10.1080/13880200701740858

[View at Publisher](#)

6 Silalahi, J., Yademetripermata, Putra, E.L.

Antibacterial activity of hydrolyzed virgin coconut oil

(2014) *Asian Journal of Pharmaceutical and Clinical Research*, 7 (SUPPL. 2), pp. 90-94. Cited 20 times.
<http://innovareacademics.in/journals/index.php/ajpcr/article/download/1042/707>

7 Boateng, L., Ansong, R., Owusu, W.B., Steiner-Asiedu, M.

Coconut oil and palm oil's role in nutrition, health and national development: A review

(2016) *Ghana medical journal*, 50 (3), pp. 189-196. Cited 26 times.

- 8 Parfene, G., Horincar, V., Tyagi, A.K., Malik, A., Bahrim, G.
Production of medium chain saturated fatty acids with enhanced antimicrobial activity from crude coconut fat by solid state cultivation of *Yarrowia lipolytica*
(2013) *Food Chemistry*, 136 (3-4), pp. 1345-1349. Cited 28 times.
doi: 10.1016/j.foodchem.2012.09.057
[View at Publisher](#)
-
- 9 Dewi, R.S., Kusumaningati, H., Thalib, N.
A 12.5% virgin coconut oil solution as an alginate impression material disinfectant
(2019) *Journal of International Dental and Medical Research*, 12 (2), pp. 443-447.
http://www.jidmr.com/journal/wp-content/uploads/2019/07/12_18088-ED-2-OK_layout.pdf
-
- 10 Indah Sari, L.N., Fauziah, E., Budiardjo, S.B., Suharsini, M., Sutadi, H., Indarti, I.S., Rizal, M.F.
Antibacterial and antifungal effectiveness of Virgin Coconut Oil (VCO) mousse against *Streptococcus mutans* and *Candida albicans* biofilms
(2019) *Journal of International Dental and Medical Research*, 12 (3), pp. 917-922. Cited 2 times.
http://www.jidmr.com/journal/wp-content/uploads/2019/10/13-D3_17403_Eva-Fauziah.pdf
-
- 11 Nguyen, V.T.A., Le, T.D., Phan, H.N., Tran, L.B.
Isolating free fatty acids from virgin coconut oil using lipases from different sources
(2018) *Jurnal Teknologi*, 80 (3), pp. 55-59.
<https://jurnalteknologi.utm.my/index.php/jurnalteknologi/article/download/11582/6357>
doi: 10.11113/jt.v80.11582
[View at Publisher](#)
-
- 12 Firdaus, N.S., Fauziah, E., Sutadi, H.
Antibacterial effectiveness of Virgin Coconut Oil Mousse against *Streptococcus mutans* Biofilm in early childhood caries
(2019) *Journal of International Dental and Medical Research*, 12 (2), pp. 429-433. Cited 2 times.
http://www.jidmr.com/journal/wp-content/uploads/2019/07/10_17331-ED-2-OK_layout.pdf
-
- 13 Shilling, M., Matt, L., Rubin, E., Visitacion, M.P., Haller, N.A., Grey, S.F., Woolverton, C.J.
Antimicrobial effects of virgin coconut oil and its medium-chain fatty acids on *clostridium difficile*
(2013) *Journal of Medicinal Food*, 16 (12), pp. 1079-1085. Cited 45 times.
doi: 10.1089/jmf.2012.0303
[View at Publisher](#)
-
- 14 Haron, U.A., Abllah, Z., Nasir, N.A.
The Comparative Antimicrobial Effect of Activated Virgin Coconut Oil (AVCO) and Virgin Coconut Oil (VCO) against Dental Caries-Related Pathogens
(2018) *International Dental Conference of Sumatera Utara 2017 (IDCSU 2017)*;
Atlantis Press
-
- 15 Mansor, T.S.T., Che Man, Y.B., Shuhaimi, M., Abdul Afiq, M.J., Ku Nurul, F.K.M.
Physicochemical properties of virgin coconut oil extracted from different processing methods
(2012) *International Food Research Journal*, 19 (3), pp. 837-845. Cited 67 times.
[http://www.ifrj.upm.edu.my/19%20\(03\)%202012/\(8\)%20IFRJ%2019%20\(03\)%202012%20Che%20Man.pdf](http://www.ifrj.upm.edu.my/19%20(03)%202012/(8)%20IFRJ%2019%20(03)%202012%20Che%20Man.pdf)
-

- 16 Jin, Y., Zhang, T., Samaranayake, Y.H., Fang, H.H.P., Yip, H.K., Samaranayake, L.P.
The use of new probes and stains for improved assessment of cell viability and extracellular polymeric substances in *Candida albicans* biofilms

(2005) *Mycopathologia*, 159 (3), pp. 353-360. Cited 71 times.
doi: 10.1007/s11046-004-6987-7

[View at Publisher](#)

- 17 Ahmad, S.J., Lian, H.H., Basri, D.F., Zin, N.M.
Mode of action of endophytic streptomyces sp., SUK 25 extracts against MRSA; microscopic, Biochemical and time-kill analysis

(2015) *International Journal of Pharmaceutical Sciences Review and Research*, 30 (1), art. no. 03, pp. 11-17. Cited 6 times.

<http://globalresearchonline.net/journalcontents/v30-1/03.pdf>

- 18 Zeng, X., Ye, G., Tang, W., Ouyang, T., Tian, L., Ni, Y., Li, P.
Fungicidal efficiency of electrolyzed oxidizing water on *Candida albicans* and its biochemical mechanism

(2011) *Journal of Bioscience and Bioengineering*, 112 (1), pp. 86-91. Cited 23 times.

doi: 10.1016/j.jbiosc.2011.03.003

[View at Publisher](#)

- 19 Basma, A.A., Zuraini, Z., Sasidharan, S.
A transmission electron microscopy study of the diversity of *Candida albicans* cells induced by *Euphorbia hirta* L. leaf extract in vitro

(2011) *Asian Pacific Journal of Tropical Biomedicine*, 1 (1), pp. 20-22. Cited 16 times.

<http://www.journals.elsevier.com/asian-pacific-journal-of-tropical-biomedicine/>

doi: 10.1016/S2221-1691(11)60062-2

[View at Publisher](#)

- 20 Nakakoshi, M., Nishioka, H., Katayama, E.
New versatile staining reagents for biological transmission electron microscopy that substitute for uranyl acetate

(2011) *Journal of Electron Microscopy*, 60 (6), pp. 401-407. Cited 42 times.

doi: 10.1093/jmicro/dfr084

[View at Publisher](#)

- 21 Long, K.
Modified coconut oils with broad antimicrobial spectrum
(2010) *Malaysian Agricultural Res*
Dev IN, United States patent application US 12/090,661;

- 22 Lee, H.-S., Kim, Y.
Antifungal activity of *Salvia miltiorrhiza* against *Candida albicans* is associated with the alteration of membrane permeability and (1,3)- β -D-glucan synthase activity

(2016) *Journal of Microbiology and Biotechnology*, 26 (3), pp. 610-617. Cited 18 times.

<http://www.jmb.or.kr/journal/download.php?Filedir=../submission/journal/026/&num=7587>

doi: 10.4014/jmb.1511.11009

[View at Publisher](#)

- 23 Singh, M., Mallick, A.K., Banerjee, M., Kumar, R.
Loss of outer membrane integrity in Gram-negative bacteria by silver nanoparticles loaded with *Camellia sinensis* leaf phytochemicals: Plausible mechanism of bacterial cell disintegration ([Open Access](#))

(2016) *Bulletin of Materials Science*, 39 (7), pp. 1871-1878. Cited 21 times.
<http://www.ias.ac.in/article/fulltext/boms/039/07/1871-1878>
doi: 10.1007/s12034-016-1317-5

[View at Publisher](#)

- 24 Widodo, G.P., Sukandar, E.Y., Adnyana, I.K., Sukrasno, S.
Mechanism of action of coumarin against *Candida albicans* by SEM/TEM analysis
(2012) *Journal of Mathematical and Fundamental Sciences*, 44 (2), pp. 145-151. Cited 4 times.

🔍 Abllah, Z.; Department of Paediatric Dentistry and Dental Public Health, Kulliyyah of Dentistry, International Islamic University Malaysia, Kuantan, Pahang, Malaysia; email: drzura@iiium.edu.my

© Copyright 2020 Elsevier B.V., All rights reserved.

< Back to results | 1 of 3 Next >

^ Top of page

About Scopus

What is Scopus
Content coverage
Scopus blog
Scopus API
Privacy matters

Language

日本語に切り替える
切换到简体中文
切换到繁體中文
Русский язык

Customer Service

Help
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.

 RELX