



Philippine COVID-19 Living Clinical Practice Guidelines

Institute of Clinical Epidemiology, National Institutes of Health, UP Manila

In cooperation with the Philippine Society for Microbiology and Infectious Diseases

Funded by the DOH AHEAD Program through the PCHRD

VIRGIN COCONUT OIL

RECOMMENDATION

There is no evidence to recommend the use of virgin coconut oil as adjunct treatment for patients with COVID-19 infection.

Consensus Issues

None raised during the panel meeting.

EVIDENCE SUMMARY

Should virgin coconut oil be used in the adjunctive treatment of COVID-19?

Antonio L. Faltado Jr., MD, FPCP, FPSEDM and Anna Angelica Macalalad-Josue, MD, FPCP, FPSEDM

Key Findings

Virgin coconut oil (VCO) is rich in lauric acid and pharmacologically active metabolite monolaurin. In vitro studies have found that VCO has anti-inflammatory, antioxidant, antibacterial, antifungal, and antiviral properties. In a clinical trial involving HIV and AIDS patients, VCO treatment led to an increase in CD4+ and lymphocyte counts as well as reduction in viral load. Currently, there are no published studies assessing the efficacy and safety of virgin coconut oil as an adjunctive treatment for COVID-19.

Introduction

There has been a growing interest in the use of virgin coconut oil (VCO) as an adjunctive treatment of COVID-19 due to its anti-inflammatory and antiviral properties [1]. This will be very advantageous for the Philippines who is considered to be one of the leading producers of coconut oil in the world [2]. VCO is naturally extracted from coconut kernel without the application of high temperature and chemical treatment [3]. It contains high amounts of medium chain saturated fatty acid (MCFA) predominantly lauric acid [4] which are easily hydrolyzed in the GI tract [5] and can generate sufficient quantities of the pharmacologically active compounds such as the monolaurin [6]. Monolaurin compounds are the major metabolite responsible for its efficacy [7]. In vitro studies show that fermented VCO possesses antibacterial activities against a variety of strains including *Candida* [8] and *Staphylococcus aureus* [9]. It also exhibits anti-inflammatory properties that lead to reduction in TNF α , IFN γ , IL-6, IL-8, and IL-5 [10]. In addition, VCO also contains a high percentage of phenolic acids which are known antioxidants; these contribute to its oxidative stability as well as nutritional and organoleptic properties [11]. In vitro studies found that VCO has antiviral activity against enveloped viruses such as influenza and coronavirus [12]. Furthermore, Bartolotta et al showed that lauric acid was able to reduce virus yields of several attenuated and pathogenic strains of Junin virus in a dose dependent manner without affecting the cell viability



Philippine COVID-19 Living Clinical Practice Guidelines

[13]. A clinical trial done by Dayrit et al found that VCO was able to increase CD4+ and lymphocyte counts as well as reduction in viral load among HIV and AIDS patients [14].

Review Methods

We performed a comprehensive systematic search of related literature from Medline and CENTRAL. We also searched for ongoing clinical trials using ClinicalTrial.gov and Clinicaltrialsregister.eu. Freehand search using Google was also done to check for other sources of information including the Love Platform App. There was no limit including the date, language and country of publication. We also searched for indirect evidence (i.e., use of VCO for treatment of SARS-CoV-1, MERS- COV and HIV/AIDS). Search was conducted using the following search terms: COVID-19, SARS-CoV-2, virgin coconut oil and coconut oil.

Eligible articles were evaluated using the following criteria:

Population	COVID-19 patients any age, co-morbidities and severity
Intervention/Exposure	Virgin coconut oil
Comparison	Usual standard of care, placebo, any active control
Outcomes	Clinical improvement, mortality, adverse effects
Methodological filter	randomized controlled trials (RCT), observational clinical studies, systematic review and meta-analysis available

Results

We did not find any articles that matched our criteria.

Recommendations from other groups

Currently there are no clinical practice guidelines that make a recommendation on the use of VCO as adjunctive treatment of COVID-19.

Ongoing Studies

There are two ongoing studies on the efficacy of virgin coconut oil as adjunctive treatment for COVID-19 (Appendix 1).

References

- [1] Department of Science and Technology [Internet]. Expertalk Online: Virgin Coconut Oil (VCO). Manila, Philippines. 24 September 2020. Available from: <https://www.dost.gov.ph/69-s-t-videos/expertalkonline/2003-expertalk-online-virgin-coconut-oil-vco.html>
- [2] Food and Agriculture Organization of the United Nations. FAOSTAT. Available at: <http://www.fao.org/faostat/en/#data>.
- [3] Narayanankutty A, Illam SP, Raghavamenon AC. Health impacts of different edible oils prepared from coconut (Cocos nucifera): a comprehensive review. Trends Food Sci Technol. 2018; 80:1-7
- [4] Appaiah, P., Sunil, L., Prasanth Kumar, P. K., & Gopala Krishna, A. G. (2014). Composition of Coconut Testa, Coconut Kernel and its Oil. *Journal of the American Oil Chemists' Society*, 91, 917-924



Philippine COVID-19 Living Clinical Practice Guidelines

- [5] Łoś-Rycharska, E., Kierasiewicz, Z., & Czerwionka-Szaflarska, M. (2016). Medium chain triglycerides (MCT) formulas in paediatric and allergological practice. *Przeegląd Gastroenterologiczny*, 11, 226-231.
- [6] McCarty, M. F., & DiNicolantonio, J. J. (2016). Lauric acid-rich medium-chain triglycerides can substitute for other oils in cooking applications and may have limited pathogenicity. *Open Heart*, 3, e000467
- [7] Manohar, V., Echard, B., Perricone, N., Ingram, C., Enig, M., Bagchi, D., & Preuss, H. G. (2013). In vitro and in vivo effects of two coconut oils in comparison to monolaurin on *Staphylococcus aureus*: rodent studies. *J Med Food*, 16, 499-503
- [8] Ogbolu, D. O., Oni, A. A., Daini, O. A., & Oloko, A. P. (2007). In vitro antimicrobial properties of coconut oil on *Candida* species in Ibadan, Nigeria. *J Med Food*, 10, 384- 387
- [9] Tangwatcharin, P., & Khopaibool, P. (2012). Activity of virgin coconut oil, lauric acid or monolaurin in combination with lactic acid against *Staphylococcus aureus*. *Southeast Asian J Trop Med Public Health*, 43, 969-985
- [10] Varma SR, Sivaprakasam TO, Arumugam I, Dilip N, Raghuraman M, Pavan KB, et al. In vitro anti-inflammatory and skin protective properties of virgin coconut oil. *J Tradit Complement Med*. 2018; 9(1):5-14.
- [11] Wallace T. Health effects of coconut oil – a narrative review of current evidence. 2019 *Journal of the American College of Nutrition*, 38:2, 97-107, DOI: 10.1080/07315724.2018.1497562
- [12] Hierholzer JC, Kabara JJ. In vitro effects of monolaurin compounds on enveloped RNA and DNA Viruses. *J Food Saf*. 1982; 4(1):1-12.
- [13] Bartolotta S, García CC, Candurra NA, Damonte EB. Effect of fatty acids on arenavirus replication: inhibition of virus production by lauric acid. *Arch Virol*. 2001; 146(4):777–90.
- [14] Dayrit C. Coconut oil in health and disease: its and monolaurin's potential cure for HIV/AIDS. *Indian Coconut Journal* 2000; (31):19-24 Available from: <http://coconutresearchcenter.org/wp-content/uploads/2015/11/article10526.pdf>

Appendix Table 1: Characteristics of Ongoing Studies

Clinical Trial Identifier/Title	Population	Intervention	Comparator	Outcome
NCT04594330 Pilot Trial for the Benefit of Virgin Coconut Oil (VCO) as a Potential Adjuvant Therapy in COVID-19 Patients	Patients diagnosed with COVID-19 in Central Public Hospital Dr. Sardjito, Teaching Hospital of Universitas Gadjah Mada (UGM), and Yogyakarta COVID-19 referral hospitals (RSUD Wonosari and Sleman)	Virgin coconut oil and placebo	Placebo	Primary outcome: Clinical improvement Secondary Outcome: Leukocyte count, lymphocyte count, neutrophil count, NLR, D-dimer, TNF-alpha, IL-6, ferritin, procalcitonin, chest radiology outcome



Philippine COVID-19 Living Clinical Practice Guidelines

Virgin coconut oil as adjunctive treatment for COVID-19 patients	Patients admitted at the Philippine General Hospital with moderate to severe COVID-19	Virgin coconut oil and standard care	Standard Care	Primary outcome: recovery/resolution of symptoms stratified according to severity of disease Secondary Outcome: duration of hospital stay, time to first receiving ventilation or admitted to intensive care, white blood cell count, IL-6, ferritin, CRP, immunoglobulin, CD4+ counts (baseline, at one week and at two weeks, negative test result for COVID
--	---	--------------------------------------	---------------	---