

Preliminary study on the In-Vitro Susceptibility of *Mycobacterium tuberculosis* Isolates to Virgin Coconut Oil

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ABSTRACT:

Background: Tuberculosis remains a major public health threat. Studies have shown that medium chain fatty acids (MCFA), such as, those found in Virgin Coconut Oil (VCO), possess activity against a wide range of microorganisms including *Mycobacterium tuberculosis*. The goal of the study was to determine the in-vitro susceptibility of *M. tuberculosis* (TB) isolates to two commercial brands of VCOs each containing different amounts of lauric acid and produced by two different extraction processes. Two brands of VCO were tested for their anti-TB actions compared to pure lauric acid and a negative control. Two replicate runs were done. VCO samples were inoculated with 0.1 mL of the H37RV strain of *M. tuberculosis* and incubated at 37°C with shaking for 5 days. After incubation, the mixtures were diluted 10-fold up to 10⁻⁴ concentration to obtain countable colonies using Middlebrook 7H10 agar plates and Lowenstein-Jensen (L-J) slants. Colony growths of *M. tuberculosis* were examined in each dilution every week for three to eight weeks.

Results: Both brands of VCO at increasing dilution from 1:10 to 1:10000 lowered the colony counts of *M. tuberculosis* by 46% to 100 % on the Middlebrook 7H10 agar. Similar results were noted on L-J slants with colony counts decreasing by 25% to 96%. Lauric acid solution showed complete inhibition of bacterial growth in both the agar plates and LJ slants.

Conclusion: Different VCO preparations containing different amounts of lauric acid exhibited different degree of inhibition against *M. tuberculosis*. The result of the study suggests the

potential of VCOs agent against the growth of *M. tuberculosis* Similar effect on other organisms is a possibility and should also be explored. But more studies are needed to replicate the studies using different concentrations of VCOs, lauric acid and other fatty acids in VCO such as myristic acid, caproic or caprylic acids.

Key words: Lauric acid, virgin coconut oil, tuberculosis, food supplement