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In vitro and in vivo effects of two coconut oils in comparison to monolaurin on Staphylococcus aureus: rodent studies

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Abstract

Since monolaurin, a monoglyceride formed in the human body in small quantities, has proven effective both in vitro and in vivo against certain strains of Staphylococcus aureus, an important question arises whether consuming a substance high in lauric acid content, such as coconut oil could increase intrinsic monolaurin production to levels that would be successful in overcoming staphylococcal and other microbial invaders. Both a cup plate method and a microdilution broth culture system were employed to test bacteriostatic and bactericidal effects of the test agents in vitro. To test effectiveness in vivo, female C3H/he mice (10-12 per group) were orally administered sterile saline (regular control), vancomycin (positive control), aqueous monolaurin, or two varieties of coconut oil (refined, bleached, deodorized coconut oil and virgin coconut oil) for 1 week before bacterial challenge and 30 days after. A final group received both monolaurin and vancomycin. In contrast to monolaurin, the coconut oils did not show bactericidal activity in vitro. In vivo, the groups receiving vancomycin, monolaurin, or the combination showed some protection--50-70% survival, whereas the protection from the coconut oils were virtually the same as control--0-16% survival. Although we did not find that the two coconut oils are helpful to overcome S. aureus infections, we corroborated earlier studies showing the ability of monolaurin to do such.

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