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A systematic review of studies investigating the effect of honey and citrus on *Streptococcus pyogenes*

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Background: Taking honey with citrus juice (lemon/lime/calamansi) to soothe sore throat has been practiced in many parts of the world for decades. Various combinations of honey with different types of citrus juice (lime, lemon and calamansi to name a few) have been traditionally used by the Egyptians, Assyrians, Greeks, Romans, Chinese, Indians and Malays for the treatment of sore throat. The amount of honey and citrus juice used also varies from different cultures and places.

Objective: To systematically review the antibacterial effect of honey and citrus juice on *Streptococcus pyogenes*.

Methodology: Using the keywords honey, manuka, tualang, citrus, lime and *Streptococcus pyogenes*, we systematically searched EBSCOhost, Ovid, Scopus and WEB OF SCIENCE databases for reports of studies investigating the antibacterial effect of honey and citrus juice on *Streptococcus pyogenes*.

Results: A total of 415 abstracts were initially identified. 26 abstracts were finally chosen and reviewed by looking at the title, abstracts and full paper using pre-determined inclusion and exclusion criteria in relation to honey (n=22) and citrus (n=4). None of the articles studied the effect of both honey and citrus juice on the organism. Majority of the studies showed that both honey and citrus have significant antimicrobial effect on *Streptococcus pyogenes*.

Conclusions: There is no available data on the combined effect of honey and citrus on *Streptococcus pyogenes*. This knowledge gap offers an opportunity to investigate those effects with the purpose to support traditional practice with scientific evidences.

Biography

Nurul Azmawati Mohamed has completed her Bachelor of Medicine and Surgery in 2002 from University of Sheffield, United Kingdom and Masters of Pathology (Medical Microbiology) in 2012 from National University of Malaysia. She is a Clinical Microbiologist and Senior Medical Lecturer at Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia. Her interest is in bacteriology, particularly on antibiotic resistant organisms. She has published 10 articles in journals and presented in conferences locally and internationally.

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