GERMAGIC™ THYME DISINFECTANT SPRAY FOR CORONAVIRUS (UPDATE)

PURPOSE

To provide scientific evidence on the use of GERMAGIC™ Thyme Spray for coronavirus disinfectant following a request from the Deputy Director General of Health (Medical).

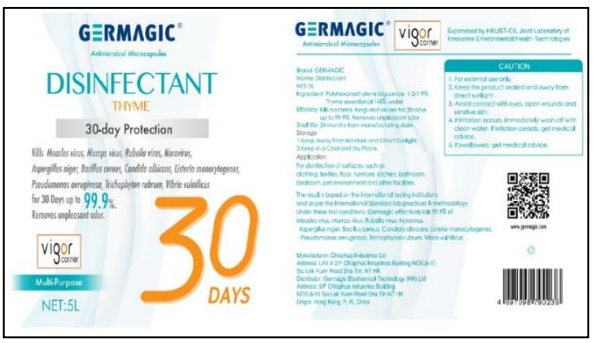
BACKGROUND

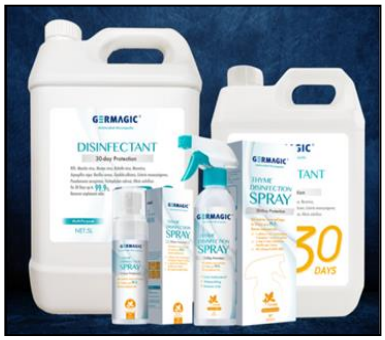
GERMAGIC™ Thyme is a germicidal product owned by Chiaphua Industries Limited. It used encapsulation technology for controlled-release of active antimicrobials - Multilevel Antimicrobial Polymer (MAP-1). GERMAGIC™ Thyme combines antimicrobial encapsulation with germicidal thyme essential oil for a more long-lasting and durable effect.[1]

The ingredients of GERMAGIC™ Thyme are thyme essential oil, polyhexadine, polyvinyl alcohol, polyethylenimine and water.[2] The company's research team has identified thyme essential oil is the most potent amongst other natural essential oils. Thymol, a terpene from thyme, plays the prominent role in antimicrobial effect.[1]

GERMAGIC™ Thyme is a wide spectrum and has been tested against multiple bacteria, fungi and viruses. This product has an effective period of up to 90 days. It is designed for use on different surfaces including metals, concrete, wood, glass, plastics as well as fabrics, leathers and textiles without changing the materials' appearance and tactile feel.[3] GERMAGIC Thyme was found to be effective against feline calicivirus (FCV), a surrogate for Norovirus. As FCV is a small, non-enveloped virus, it is amongst the most resistant to inactivation by disinfection. In 2016, U.S. EPA (Environmental Protection Agency) guideline stated that being effective against FCV is equivalent to being able to inactivate the coronavirus; an enveloped virus which are easier to sterilize than the non-enveloped virus.[1]

GERMAGIC™ Thyme has been verified by third parties namely Hong Kong Standard and Testing Centre (HKSTC) and Eurofins (Australia) to be safe and effective. It is also a Hong Kong Eco Mark product.[1]





EFFECTIVENESS/EFFICACY

There was no relevant study retrieved from scientific databases namely Ovid Medline, PubMed and Cochrane Library.

However, there were three reports on virucidal test provided by the company demonstrating the efficacy of GERMAGIC™ Thyme disinfectant against coronavirus and highly-infectious viruses.
A virucidal test was conducted on GERMAGIC™Thyme againts SARS-CoV-2 (BEI Resources, NR-52281) on hard surface. The product demonstrated more than 3.0 $\log_{10}$ reduction of SARS-CoV-2 (as required by EPA) in the presence or absence of cytotoxicity following a nine minute 55 second exposure time at room temperature (20.0°C) and 48 to 49% relative humidity.[4]

The second test was conducted on GERMAGIC™Thyme (ready-to-use trigger spray) against human coronavirus (ATCC VR-740). GERMAGIC™Thyme completely inactivated human coronavirus following a nine minute 55 second exposure time at room temperature (20.0°C) and 50% relative humidity. Taking cytotoxicity and neutralization control results into consideration, more than 3.0 log reductions in viral titre was demonstrated.[5]

Another test report was conducted against measles, mumps, FCV and Rubella viruses. Based on the report, the results were summarised in table below:[6]

Test Virus	Test disinfectant	Contact time & test temperature	Test condition	Results
Measles (ATCC VR-24)	GERMAGIC™ Disinfectant (Thyme)	10 minutes & room temperature	Neat	4.0 log reduction in virus titre
Mumps (ATCC VR-1379)				3.3 log reduction in virus titre
FCV				4.3 log reduction in virus titre
Rubella (ATCC VR-1359)				3.0 log reduction in virus titre

According to researchers at The Hong Kong University of Science and Technology (HKUST), Multilevel Antimicrobial Polymer (MAP-1) can inactivate up to 99.9% of highly-infectious viruses e.g. measles, mumps and rubella, and 99.99% of the surrogate FCV; a gold standard for disinfection efficiency and it is more resistant than coronaviruses.[3]

TESTED BY EUROFINS, AUSTRALIA	
VIRUS	**INACTIVATION RATE**
MEASLES VIRUS	>99.99%
MUMPS VIRUS	>99.9%
FELINE CALICIVIRUS	>99.99%
RUBELLA VIRUS	>99.9%

Source: Technology of GERMAGIC™ Thyme. (Available at: http://www.germagic.com/en/our-technology-c.php)

Thymol, the major constituent of thyme essential oil was listed under EPA as a surface disinfectant agent for coronavirus (COVID-19).[7]

SAFETY

There was no retrievable evidence on its safety. However, National Health Commission in Mainland China through its Technical Standard for Disinfection stated that MAP-1 coating is proven to be non-toxic and safe for skin and environment.[3]

COST-EFFECTIVENESS

There was no retrievable evidence on cost-effectiveness of GERMAGIC™ Thyme disinfectant.

CONCLUSION

There was limited evidence retrieved on effectiveness and safety of GERMAGIC™ Thyme as disinfectant for coronavirus. Virucidal test provided by the company demonstrated its efficacy against SARS-CoV-2 and human coronavirus (complete inactivation at nine minute 55 seconds contact time). GERMAGIC™ Thyme's active ingredient was listed under EPA as a surface disinfectant for coronavirus (COVID-19).

REFERENCE

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Based on available evidence up to 22nd October 2020

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Disclaimer: This rapid assessment was prepared to provide urgent evidence-based input during COVID-19 pandemic. The report is prepared based on information available at the time of research and a limited literature. It is not a definitive statement on the safety, effectiveness or cost effectiveness of the health technology covered. Additionally, other relevant scientific findings may have been reported since completion of this report.

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