THYMOX®

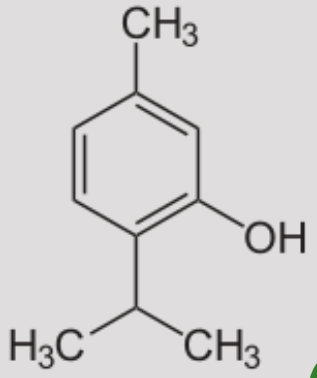
THYMOX TECHNOLOGY, “EFFECTIVE YET HARMLESS”

CVS

Thymox at a Glance

Active Ingredients: THYMOL and Thyme Oil

THYMOL



SAFETY & EFFICACY

Long history of use (spice/preservative).

Unlikely that negative health effects will occur on long term.

- Best **efficacy** amongst natural phenols
- **GRAS** molecule (Generally Recognized As Safe)
- Listed as a **flavoring** agent in the EU
- EPA's list of **Minimal Risk** Pesticides includes Thyme Oil

Thymol is what makes Listerine effective!

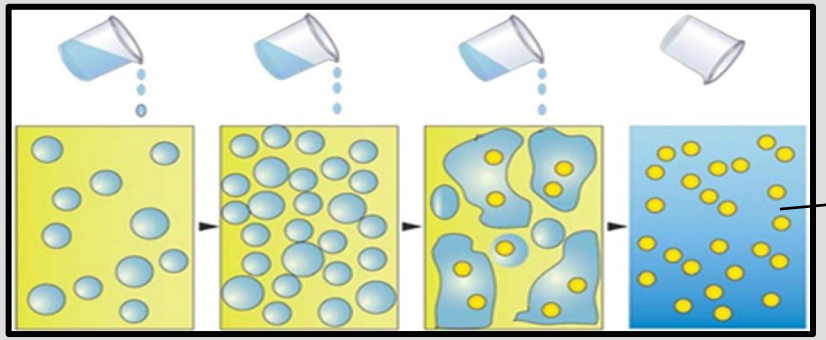
Thymox at a Glance

NANO EMULSION TECHNOLOGY

When thymol and our special patented blend of ingredients are diluted in water, a NANO EMULSION is generated

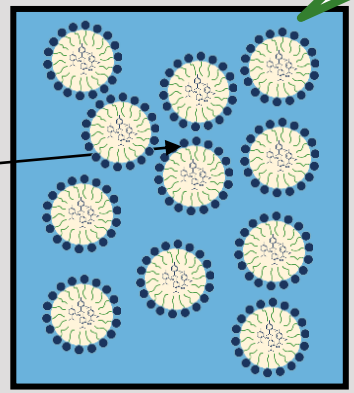
Water

Thymox (oil phase)

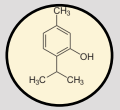


Kinetically spontaneously driven reaction

Each one of these tiny thymol « bombs » can kill microbes.

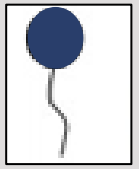


Nano size micelles



Thymol or Thyme Oil

Water Phase

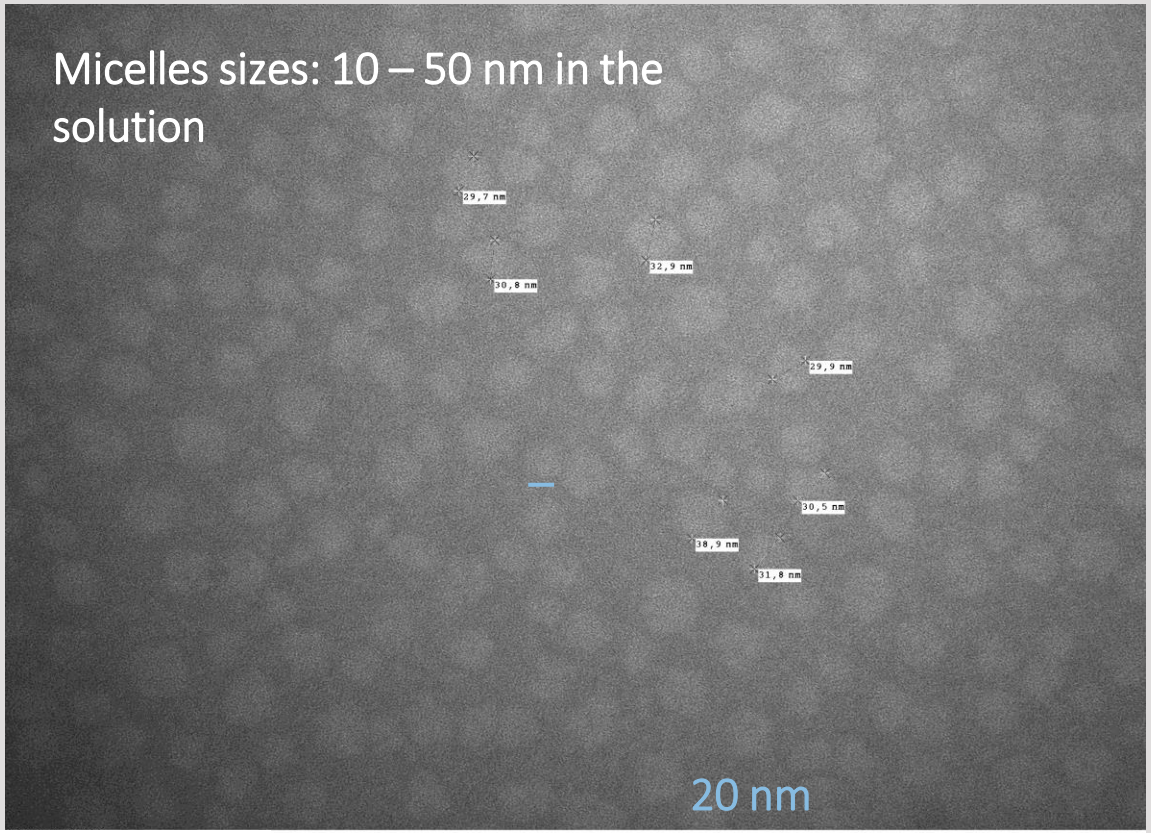


Surfactant
Hydrophilic head
Hydrophobic tail

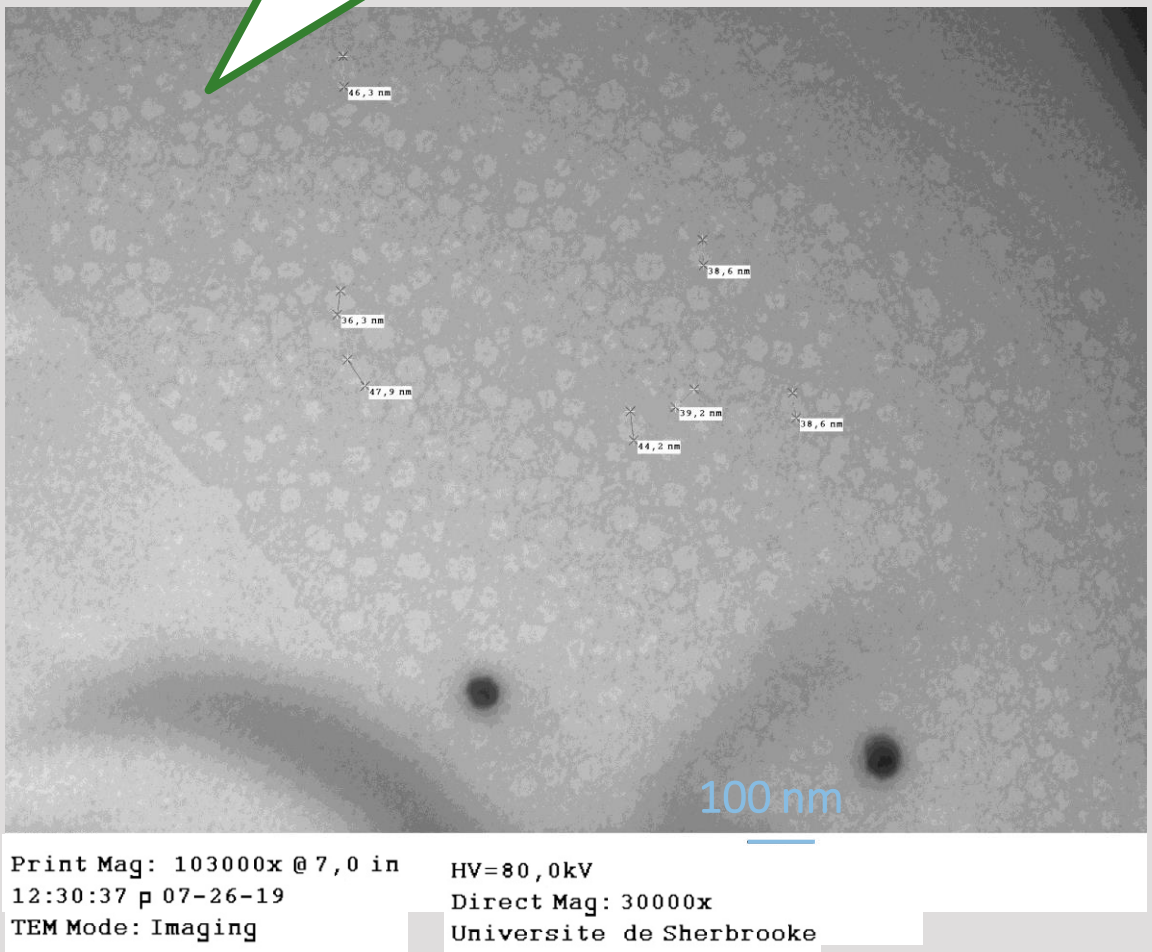
Nano Emulsions

NANO EMULSION TECHNOLOGY, AN IMAGE IS WORTH 100,000 WORDS.

This is what the thymol « bombs » look like in real-life



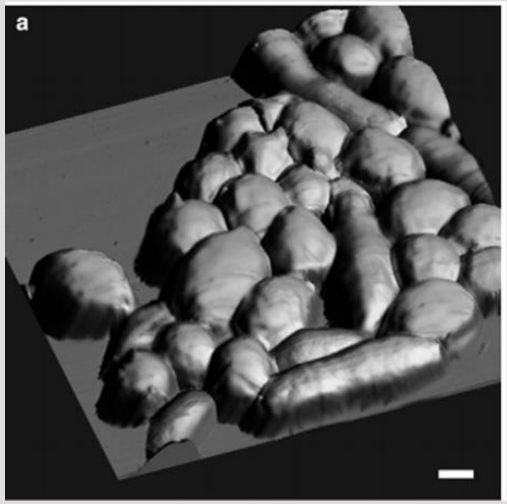
Magnification: x 100,000



Mode of Action

PATHOGENS ARE KILLED BY DISRUPTION OF CELL MEMBRANE

Thymol is a molecule that has the ability to kill microbial pathogens such as bacteria and fungi via cell membrane disruption.



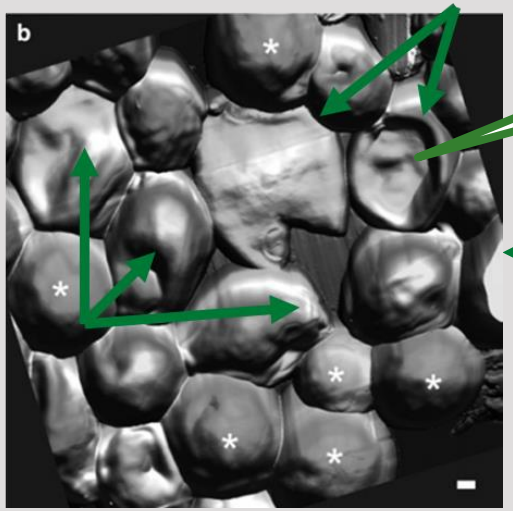


Fig. 2. Overall view of randomly chosen fields of *C. albicans* under normal conditions (**a**), and after incubation with thymol 1 MIC for 4 h (**b**). The cells marked with an *asterisk* have normal envelopes while the others have envelopes with thymol-induced alterations (AFM, bar = 1 μm).

/ atomic force microscopy. Methods Mol Biol 2011;736:401-10
Braga PC and Ricci D. Thymol-induced alterations in Candida albicans imaged by ;

Ruptured cell membranes look "deflated".

Thyme Oil

FRAC
FUNGICIDE RESISTANCE ACTION COMMITTEE

FRAC Code List ©*2019:
Fungal control agents sorted by cross resistance pattern and mode of action
(including FRAC Code numbering)

MOA	TARGET SITE AND CODE	GROUP NAME	CHEMICAL GROUP	COMMON NAME	COMMENTS	FRAC CODE
F: lipid syr	F7 cell membrane disruption (proposed)	plant extract	terpene hydrocarbons, terpene alcohols and terpene phenols	extract from *Melaleuca alternifolia* (tea tree) Plant oils (mixtures): eugenol, geraniol, thymol	Resistance not known.	46

This means Thymox will stay effective. Microbes don't build up a resistance to thymol over time, even after repeated use!

Household Disinfectant

Thymox Disinfectant Spray

TOXICOLOGICAL profile for Thymox® Disinfectant Spray (0.23% thymol)

	ACUTE TOXICITY			IRRITATION		
Test	OPPTS 870.1100 Acute oral toxicity	OPPTS 870.1200 Acute dermal toxicity	OPPTS 870.1300 Acute inhalation toxicity	OPPTS 870.2400 Acute eye irritation	OPPTS 870.2500 Acute dermal irritation	OPPTS 870.2600 Skin sensitization
Results	LD_{50}: >5000 mg/Kg	LD_{50}: >5000 mg/Kg	LC_{50}: >2.01 mg/L	Minimally irritating. all effects cleared in 24 hours	Slightly irritating. no erythema or edema at 72 hours	Not a sensitizer
EPA Cat.	IV	IV	IV	IV	IV	IV

What does this table mean?

It means that for all tests EPA requires of disinfectants, Thymox got the best grade possible.

Thymox is simply the safest around.

EPA Category IV is the Best rating available.

Household Disinfectant

This list covers pretty much all microbes consumers want to keep out of their homes.

Thymox Disinfectant Spray (Household Disinfectant)

ANTIMICROBIAL profile for Thymox® Disinfectant Spray (0.23% thymol)

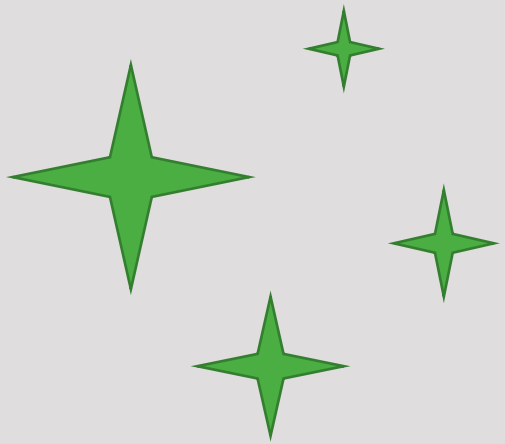
Test	Microbe		Exposure time
AOAC Germicidal Spray Test with 5% organic soil load	Bacteria	Pseudomonas aeruginosa ATCC 15442 Salmonella enterica ATCC 10708 Staphylococcus aureus ATCC 6538; Escherichia coli ATCC 11229; Escherichia coli O157:H7 ATCC 35150; Methicillin-Resistant Staphylococcus aureus MRSA ATCC 33592; Vancomycin-Resistant Enterococcus faecalis VRE ATCC 51575; Listeria monocytogenes ATCC 18117; Klebsiella pneumonia – NDM-1 positive CDC 1000527; Streptococcus suis ATCC 43765	2 min
AOAC Germicidal Spray Test with 5% organic soil load	Fungi	Trichophyton mentagrophytes ATCC 9533; Candida albicans – ATCC 10231	3 min
AOAC Virucidal Test with 5% organic soil load	Enveloped viruses	Swine Influenza A H1N1 ATCC VR-333. Strain A/Swine/Iowa/15/30; Human Immunodeficiency Virus type 1. Strain HTLV-III_B; Human Coronavirus ATCC VR-740. Strain 229E, **SARS-CoV-2 (COVID-19 virus)**	1 min
AOAC Virucidal Test with 5% organic soil load	Non-enveloped viruses	Norovirus	4 min
AOAC Tuberculocidal test with 5% organic soil load	Mycobacteria	Mycobacterium bovis – BCG (Tuberculocide)	3 min

Household Disinfectant

Thymox Disinfectant Spray (Household Disinfectant)

CLEANING PROPERTIES AND CORROSION PROPERTIES

…ARE JUST AS EXCELLENT AS THE ANTIMICROBIAL PROFILE



Household Disinfectant

Thymox Disinfectant Spray (Household Disinfectant)

CONSUMER APPEAL

Perfectly positioned for today's consumers' expectations, needs and wants; convenient, no compromise.

- Low contact times allow consumers to use surfaces and items rapidly after use.
- Best in class safety rating means no worries around kids and pets
- No need to rinse or wipe, even on food contact surfaces. Spray and walk away.
- Corrosion is virtually non-existant, almost any material can be treated.
- Effective at sanitizing fabrics, too!
- Effective against a very broad range of consumer relevant pathogens, including SARS-CoV-2.