

Essential oils – pharmacology & other things



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Scientific Knowledge About Essential Oils

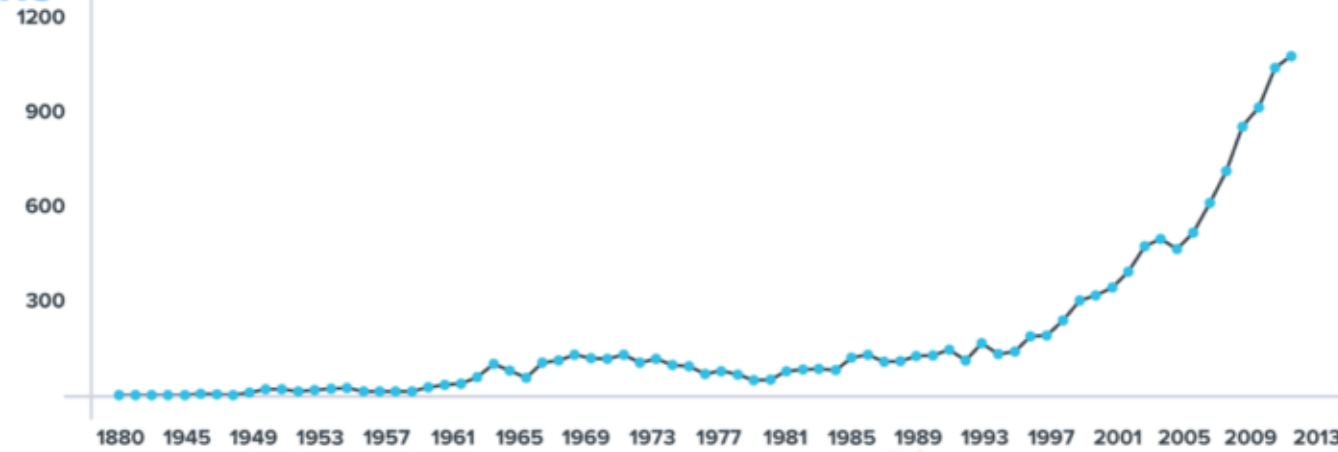
benbalden.com

Scientific knowledge is growing exponentially

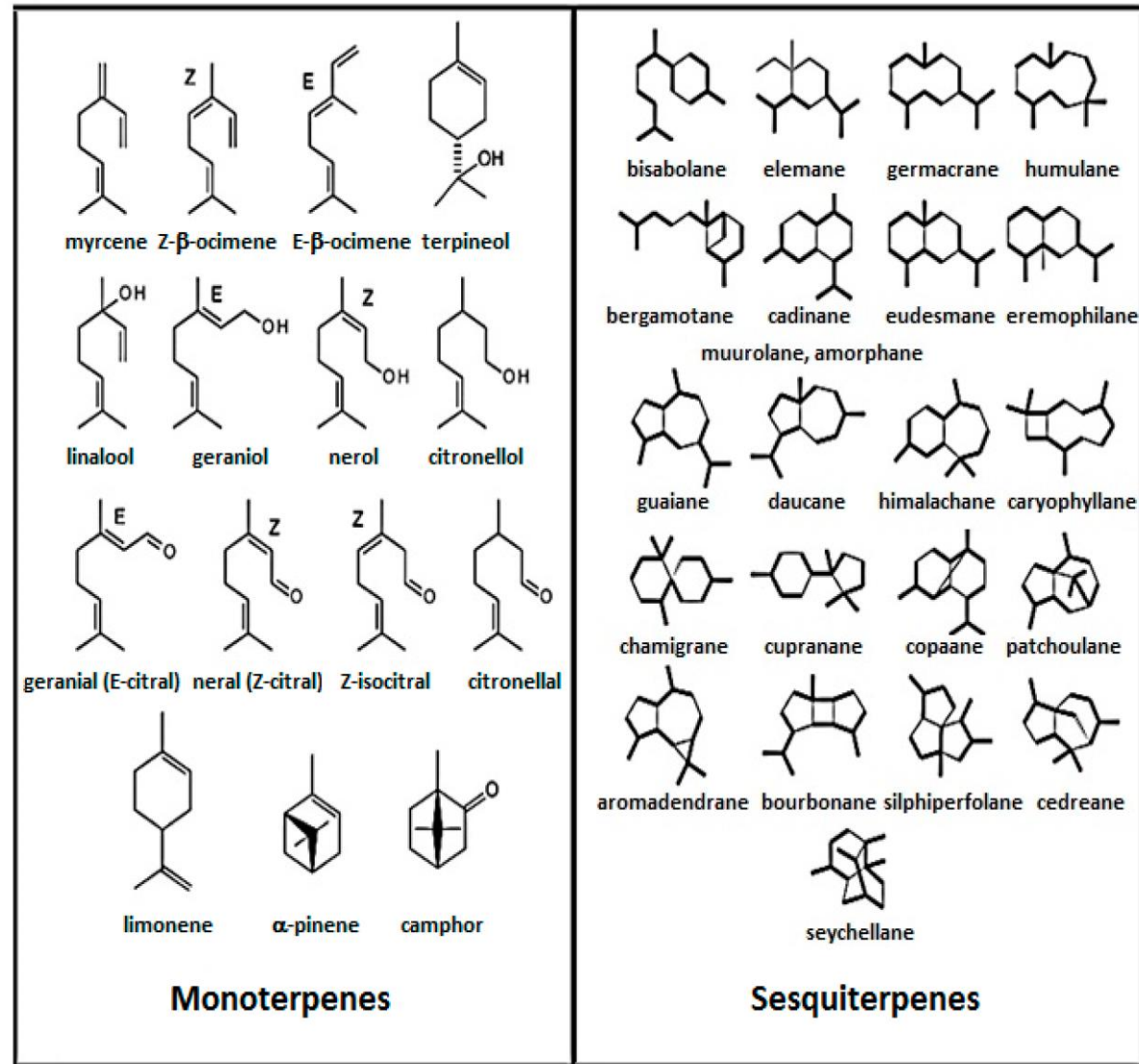
Many research institutions
are joining the cause



PubMed research papers on essential oils by year



Some chemistry...



Where are the Africans?

Oil	Plant source	Family
Bay	<i>Pimenta racemosa</i>	Myrtaceae
Bergamot	<i>Citrus bergamia</i>	Rutaceae
Cade	<i>Juniperus oxycedrus</i>	Cupressaceae
Caraway seed	<i>Carum carvi</i>	Apiaceae
Citronella java	<i>Cymbopogon nardus</i>	Gramineae
Cumin	<i>Cuminum cyminum</i>	Apiaceae
Cypress	<i>Cupressus sempervirens</i>	Cupressaceae
Geranium	<i>Pelargonium graveolens</i>	Geraniaceae
Grape fruit	<i>Citrus paradisi</i>	Rutaceae
Lavender	<i>Lavendula officinalis</i>	Lamiaceae
Lemongrass	<i>Cymbopogon citratus</i>	Gramineae
Mandarine	<i>Citrus reticulata</i>	Rutaceae
Nutmeg	<i>Myristica fragrans</i>	Myristicaceae
Palmarosa	<i>Cymbopogon martini</i>	Gramineae
Sage spanish	<i>Salvia officinalis</i>	Lamiaceae
Spearmint	<i>Mentha spicata</i>	Lamiaceae
Thyme red	<i>Thymus vulgaris</i>	Lamiaceae
Vetiver haiti	<i>Vetiveria zizanioides</i>	Gramineae
Wormwood	<i>Artemisia absinthium</i>	Asteraceae
Ylang ylang	<i>Canagaa odorata</i>	Annonaceae

THE FDA GRAS LIST	
Essential oils, oleoresins, and natural extractives (including distillates) that are generally recognized as safe for their intended use.	
COMMON NAME	COMMON NAME CONT.
Alfalfa	Lavandin
Allspice	Lemon
Almond, bitter	Lemon balm
Ambrette (seed)	Lemongrass
Angelica root	Lemon peel
Angelica seed	Lime
Angelica stem	Linden flowers
Angostura (cusparia bark)	Locust bean
Anise	Lupulin
Asafetida	Mace
Balm (lemon balm)	Mandarin
Balsam of Peru	Marjoram
Bay leaves	Marjoram, sweet
Bay (myrcia oil)	Mate
Bergamot (orange)	Melissa

Medical applications

Antibacterial:

- Clove
- Geranium
- Melaleuca
- Rosemary

Antiviral:

- Clove
- Melaleuca
- Myrrh
- Melissa
- Oregano

Analgesic:

- Rosemary
- Peppermint
- Oregano
- Ginger
- Lemon

- inhalation through the olfactory system
- absorption through the surface of the skin
- Oral?
- Steaming?

Immune Stimulant:

- Frankincense
- Lemon
- Melaleuca
- Oregano
- Thyme

Anti-Inflammatory:

- Basil
- Bergamot
- Copaiba
- Frankincense
- Wintergreen

Antirheumatic:

- Oregano
- Thyme
- Cypress
- Birch
- Clove



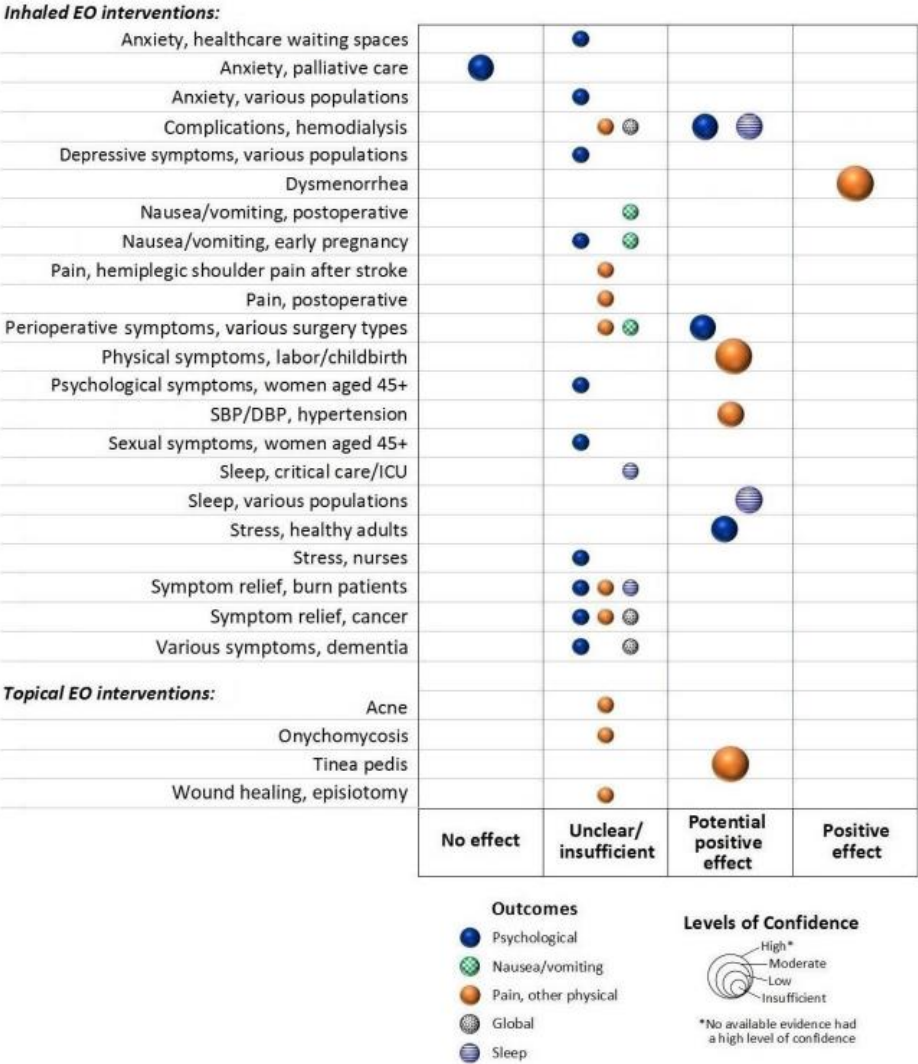
THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

wood.osu.edu

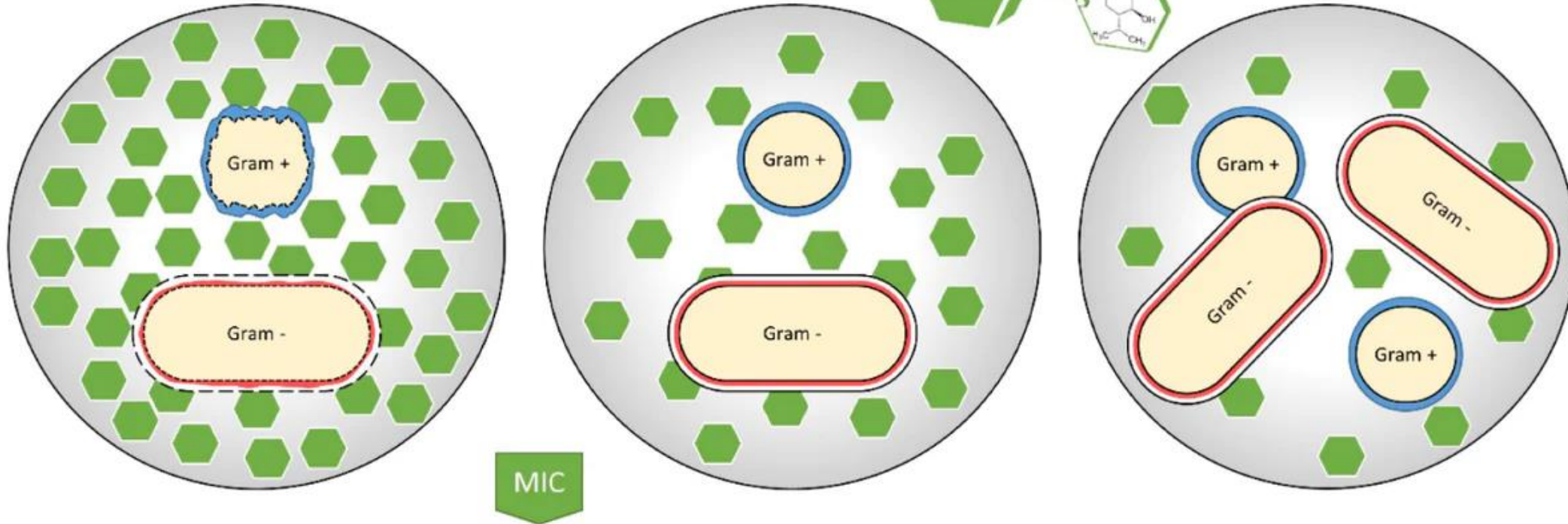
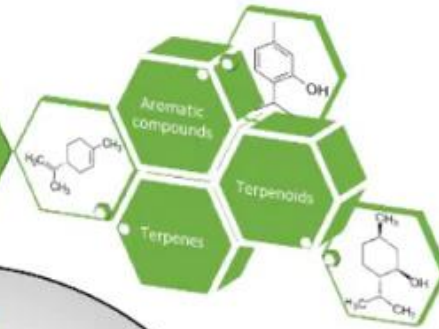
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Figure. Map of the evidence from systematic reviews of inhaled and topical essential oils for targeted health conditions/populations



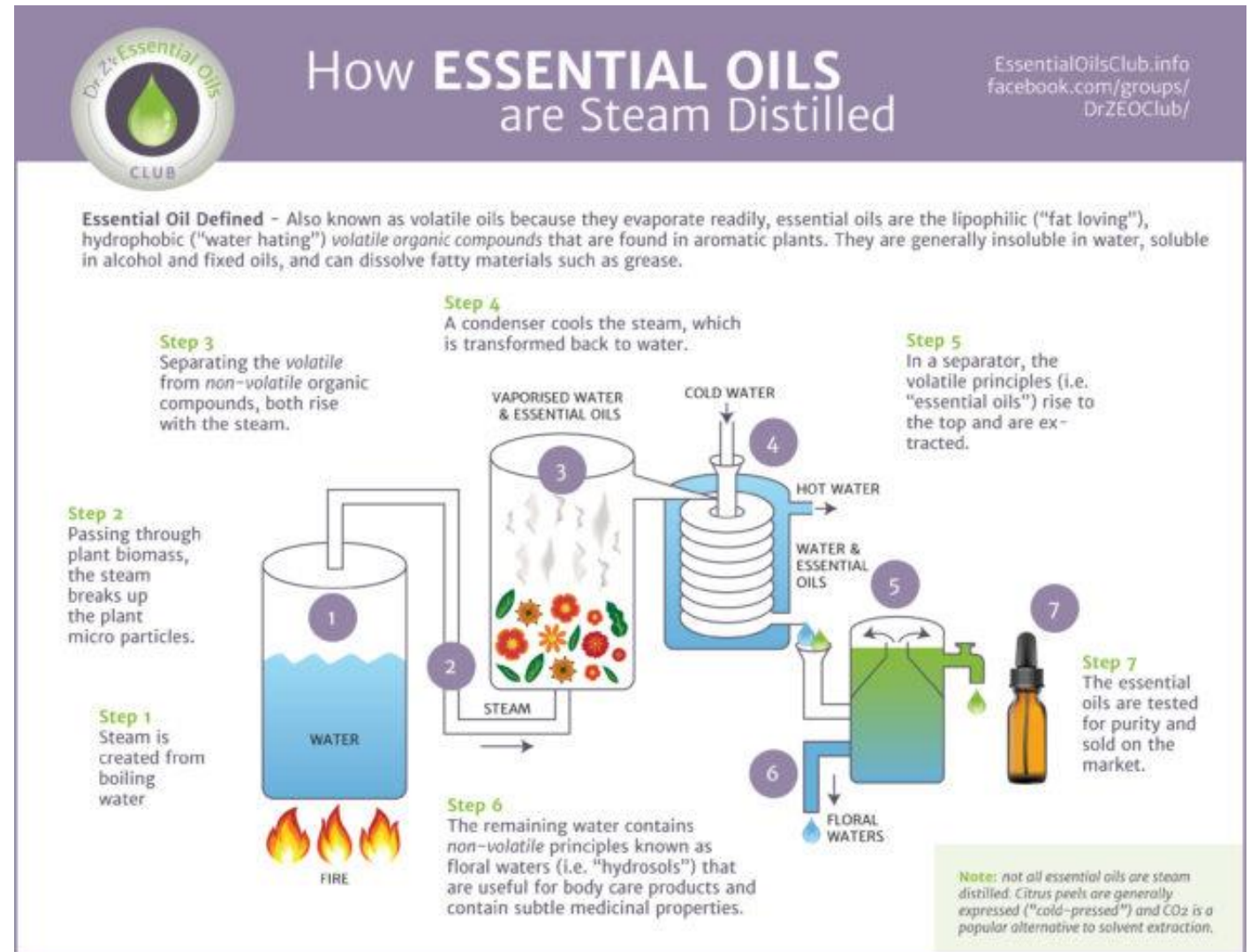
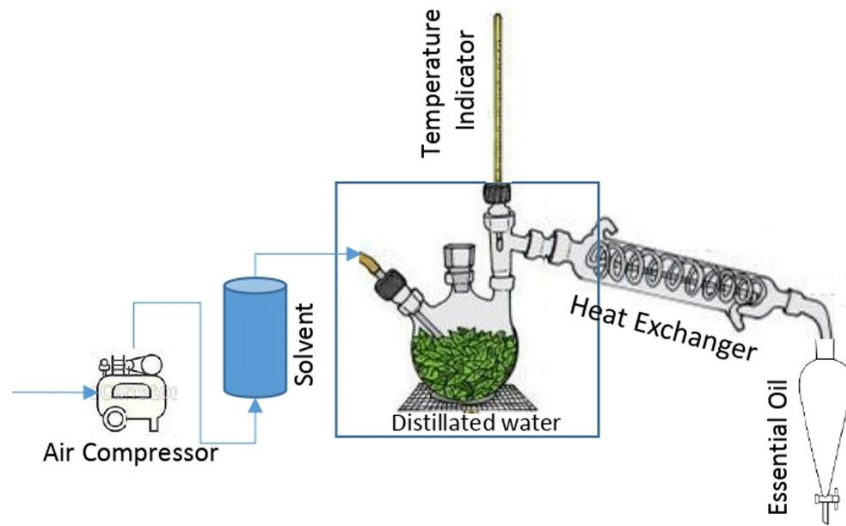
171 eligible trials is represented among the 25 SRs. Hemodialysis, perioperative patients, dysmenorrhea, labor/childbirth, sleep, anxiety, and depression were the most widely studied conditions and/or populations.

Essential oil



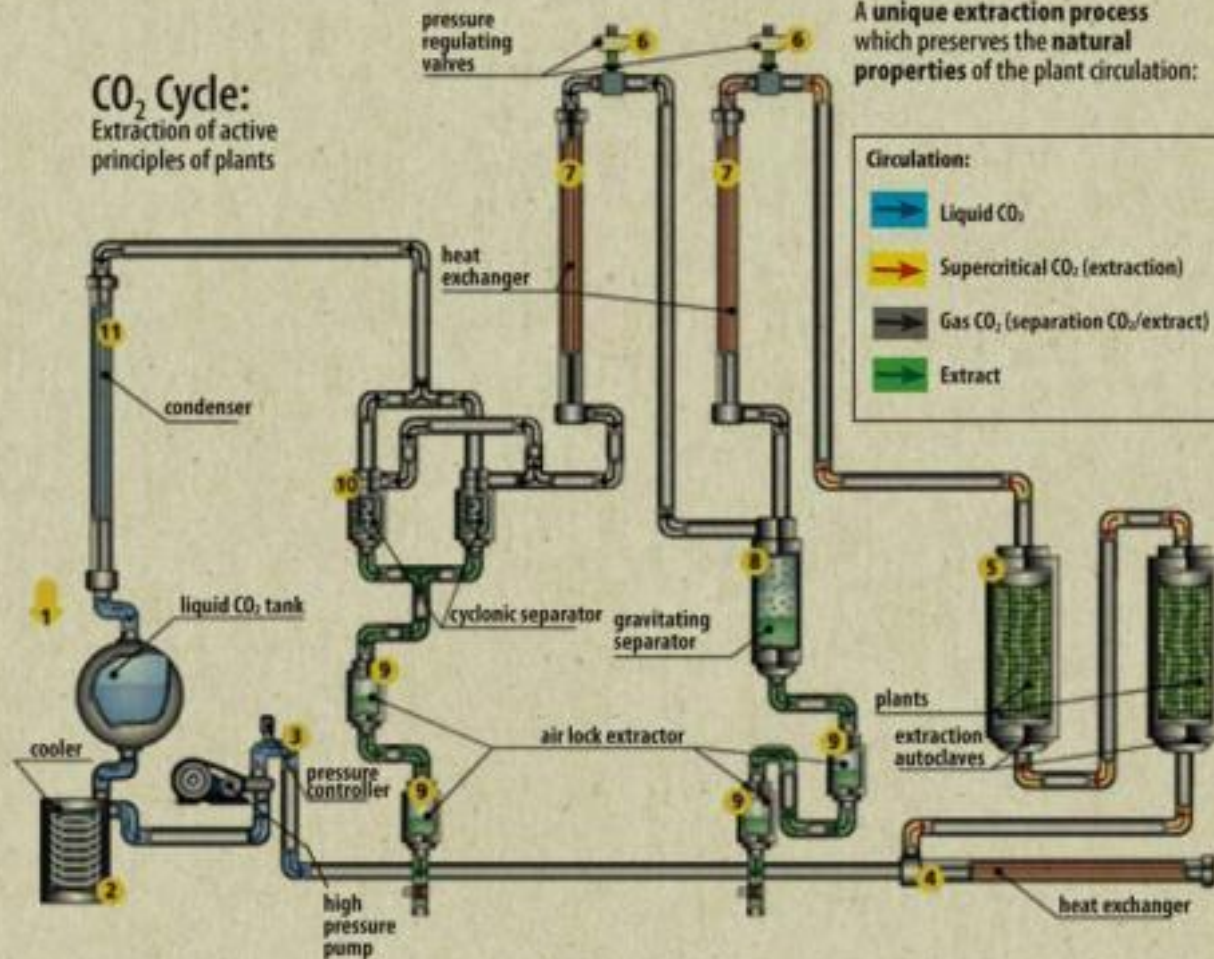
2-fold dilution of essential oil

Extraction



THE SUPERCRITICAL EXTRACTION PROCESS

CO₂ Cycle: Extraction of active principles of plants



1. **CO₂ storage**
2. **Cooling:** CO₂ passes into a cold exchanger to maintain its liquid state before entering into the high pressure pump.
3. **Pressurization:** the pressure is raised to 300 bars.
4. **Reheating:** the temperature is raised to 31° C. CO₂ is supercritical.
5. **Extraction:** CO₂ supercritical is used as solvent to extract active plant ingredients without denaturing them.
6. **Relaxation:** Lowering of the pressure and thus return of the CO₂ to a gas state allows the separation of the extract from CO₂.
7. **Reheating:** The temperature is maintained at 30° C.
8. **Separation:** 1st separation stage: separation of CO₂ from the extract by gravity.
9. **Under pulling:** The extract is decompressed gradually to be under drawn in total safety.
10. **Cyclonic separation:** 2nd stage separation: Separation of CO₂ extract by centrifugal force.
11. **Liquefaction:** still in a gas state, CO₂ is cooled for liquefaction.

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Local news

TUT and CSIR establish cannabis research hub

"Hemp and cannabis are included in the scope of the master plan, covering medicinal industrial and recreational use, cosmetics, food and beverages.

July 18, 2022

Tebogo Katsedi 2 minutes read



Sub-industries



CBD Oil in South Africa Is Av...
cbdstore.co.za



NuCare CBD Oil 600mg 3...
takealot.com



Extract 500mg Premium
takealot.com



State of play

- Lack of standardization
- Lack of laboratory infrastructure
- Lack of phytosanitary awareness / support
- Lack of regulations
- Over-regulation
- Informal industry
 - Survivalist
 - Magico-spiritual
 - Cultural is political
 - entrepreneurs



What needs to be done?

- Standardization....AAMPS
 - Need more contributors
- Training....PharmaConnect Africa
 - Need to build partnerships & funding
- Research that supports industry...CSIR / TUT
 - Need to interact with entrepreneurs



Thank you



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