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Inspired Functional Ingredients to Innovate and Differentiate Your Brand

Products by Ecovatec Solutions Inc.

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Egg Yolk Based
Natural Microencapsulation
Technology
MyCellePro™

MyCellePro™

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Why are companies looking for microencapsulated ingredients?

- IMPROVES BIOAVAILABILITY OF CORE INGREDIENTS
- Changes liquids into free-flowing solids (powders)
- Protects core materials from heat, moisture, air and light
- Masks the unpleasant taste/smell of core materials
- Extends the stability of sensitive core materials
- Improves compatibility between different materials within the same microcapsule
- Hinders the transfer rate or evaporation of core materials to the external environment
- Controls the release rate of core materials

MyCellePro™

Properties of MyCellePro

Contains:

- Bioavailable natural antioxidants: lutein, biotin, and zeaxanthin
- Omega 3, 6, and 9 fatty acids in the form of phospholipids and triglycerides
- Egg protein – known to have antioxidant properties as well as having a complete amino acid score

Features:

- Increases Bioavailability
- Clean label – naturally isolated without the use of solvents
- Non-GMO, No soy, gluten, sugar etc.
- Stable in liquid or powder form
- Heat stable
- Can mask unpleasant odors and flavors of active ingredients
- Increased shelf life of encapsulated product

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Why is there a problem delivering fat soluble ingredients?

- Many ingredients that would be helpful to our health are not “water-soluble”, they are fat-soluble, meaning that they are NOT easily absorbed from the water-based intestinal fluid.
- Your body releases bile salts into the intestine in order to create microemulsions when fats are ingested. This allows *some* of the fat-soluble products to be absorbed.
- Microemulsions = oil droplets in water that are surrounded by “surfactants” that stabilize them.
- Microemulsions can be dried into a powder while keeping the small “droplet size”, creating microencapsulation.
- Fat-soluble active ingredients such as CBD, curcumin, omega-3s, astaxanthin, biotin, etc. can be dissolved into the oil, which is then microencapsulated.
- This way, bile salts aren’t needed, and the process is more efficient at absorbing *more* of the active ingredient.

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How does our microencapsulation method work? Micelle Technology!

- Eggs naturally contain microemulsions in the form of very small (~50nm) “micelles”.
- These are oil droplets coated in phospholipids, cholesterol with proteins attached for added stability.
- Ecovatec has naturally isolated these micelles in “MyCellePro™”, benefits include:
  - Fat soluble ingredients can be added directly to product without use of a carrier oil, due to the long chain triglycerides already in the micelle
  - The long fatty acids in the phospholipid make it good at encapsulating large molecules
  - Emulsions stabilized by egg peptides, which may also improve bioavailability
- We have proven capability to add active ingredients into the micelles which can then be dried into a powder.
- Has been tested with loading 40% of hemp oil. Higher loading of 50-60% is possible.

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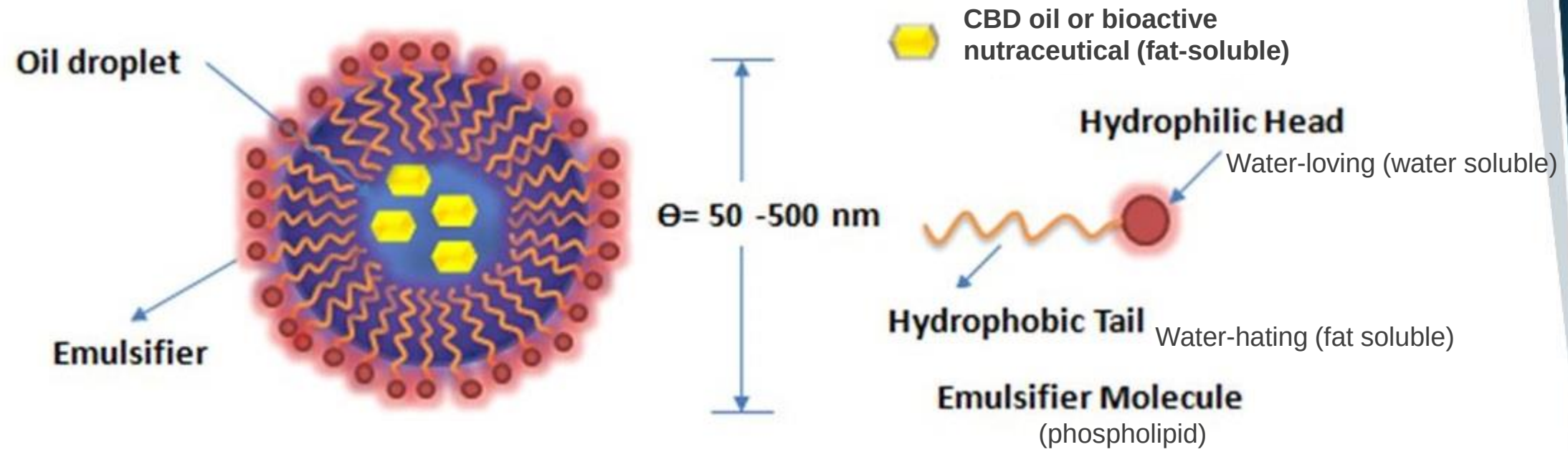
Micelle Technology



Source: http://blogs.nottingham.ac.uk/malaysiaknowledgetransfer/2013/06/25/what-is-pharmaceutical-nanoemulsion/

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Types of Active Ingredients

The global microencapsulation market: expected USD 19.34 bn by 2025, CAGR of 13.6% …part of food encapsulation market, estimated to exceed USD 45 billion by 2024

- Omega 3 Supplements –
  - USD 57.06 bn by 2025, CAGR 6.0%
- CBD oil –
  - USD 2.1bn by 2020, CAGR 31% (until 2022)
- Curcumin –
  - USD 130m by 2025, CAGR 13.3% (23 million in North America)
- Coenzyme Q10 –
  - USD $817m by 2022; CAGR 9.86%, 1,000 tons in dietary supplements in 2015
- Lutein –
  - USD357.7m by 2022, CAGR 6.3%
- Astaxanthin –
  - USD 555.4m in 2016, growth of 4.8% from 2018 to 2024
- …And More!

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