



# phytoBilayer<sup>®</sup> LB3 For Iron delivery

## A new liposomal form for Phyto-bioavailability for Berberine delivery

The plant kingdom is one of the most interesting and promising sources of active molecules. Most of the plant-derived classes of active compounds have a lipophilic, molecular structure. The direct consequence of this is a limited bioavailability.

**Lipophilic** ► **POORLY AVAILABLE**

**Water insoluble** ► **COMPROMISED EFFECTIVENESS**

### A versatile technology

Phytobilayer Technology is highly customizable in

#### Active ingredients

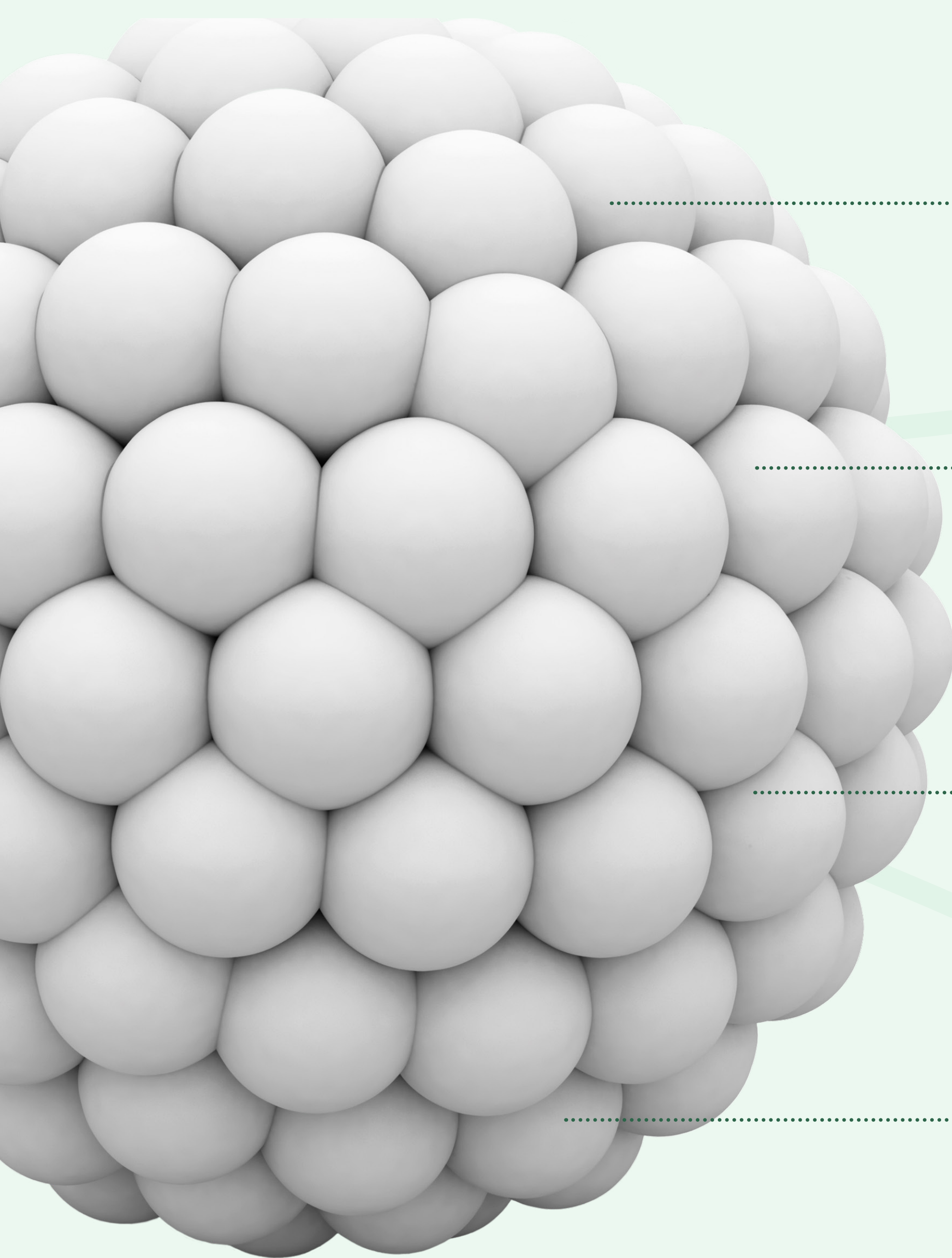
- ✓ Herbal extracts
- ✓ Aminoacid and peptides
- ✓ Vitamines and minerals

#### Coating excipients

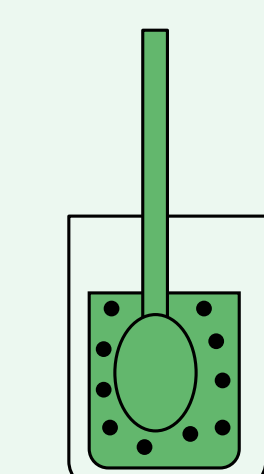
Different phospholipidic molecules can be used for the coating

#### Coating thickness

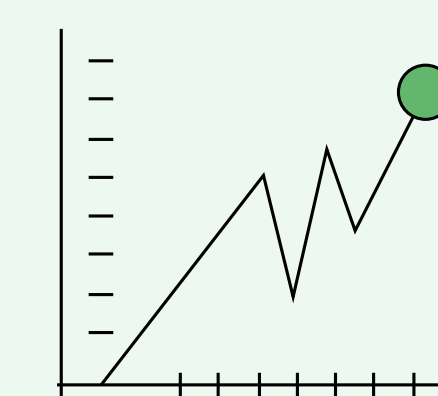
Coating process can be modulated to gain different particle size



- **Solubility**  
Thanks to phospholipids bilayer coating



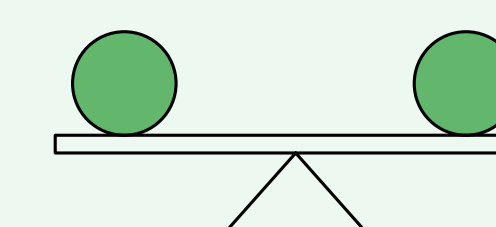
- **Bioavailability**  
Thanks to enhanced affinity for mucosas (hydrophilic external layer)



- **Taste masking**  
Thanks to the excipient pool ideated for the coating



- **Stability**  
Thanks to the excipient pool ideated for the coating



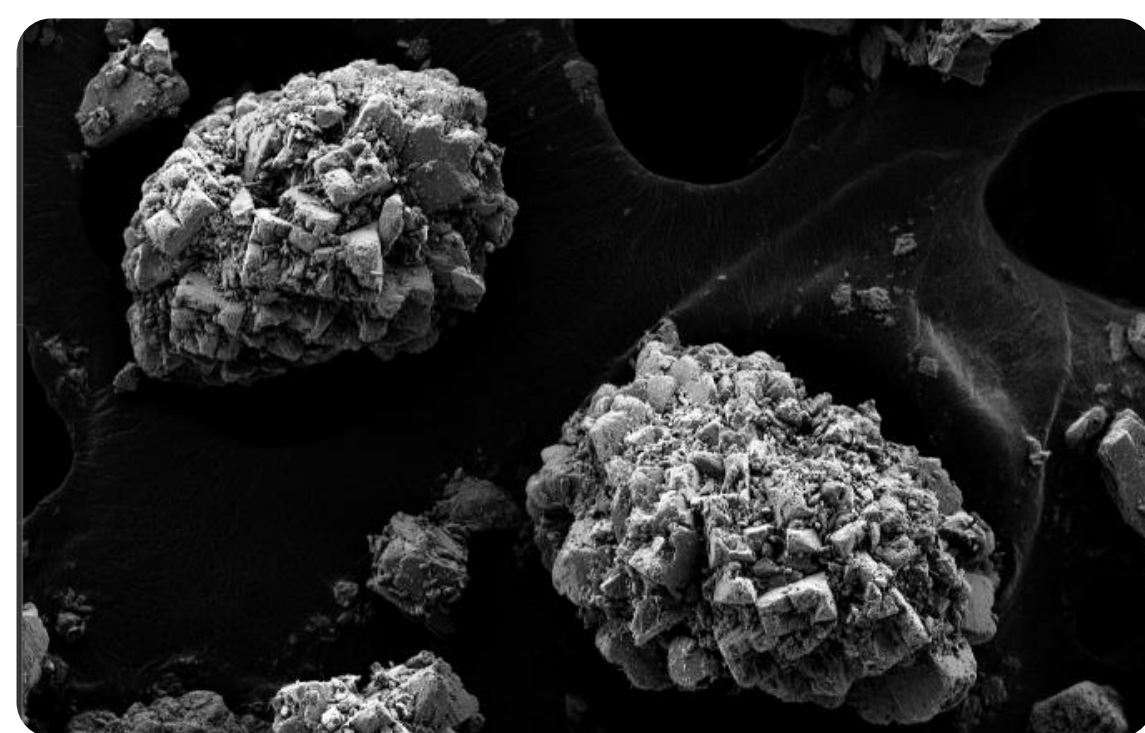


# phytoBilayer<sup>®</sup> LB3 For Iron delivery

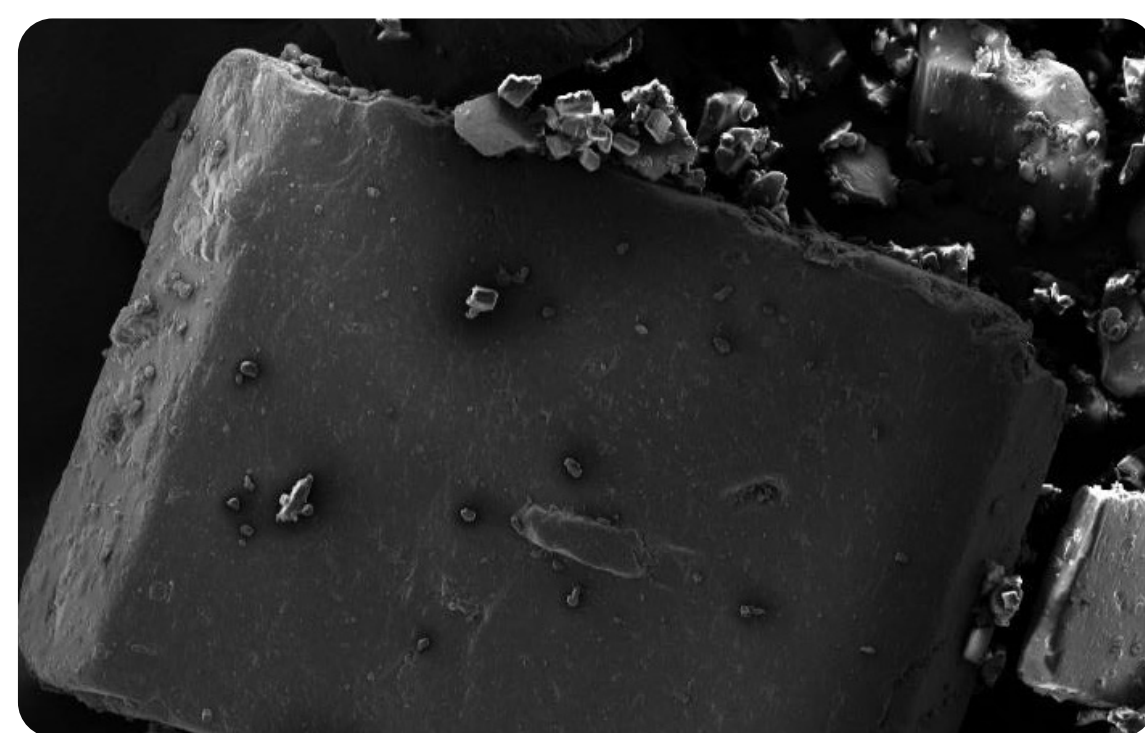
## A new liposomal form for Phyto-bioavailability for Berberine delivery

### The technology

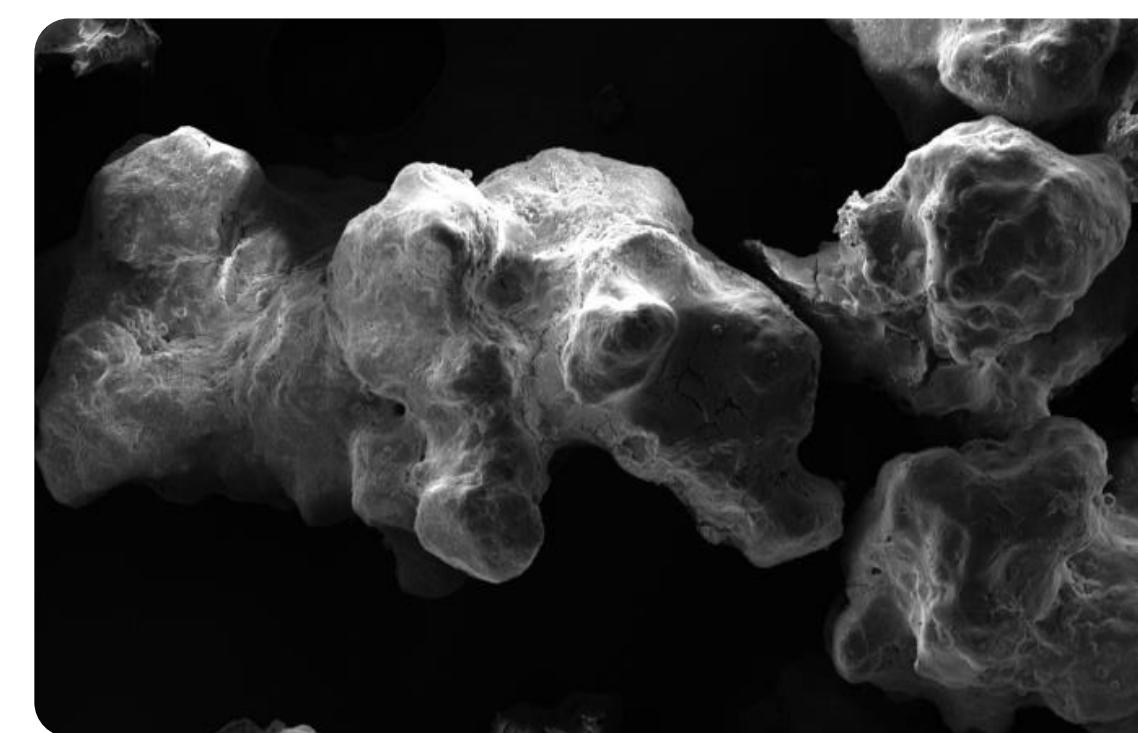
Liposomes are spherical particles showing at least one lipid bilayer, composed of phospholipids so that the inner and the outer surface are hydrophilic, and this enables a better solubility in hydro-medium. Phytobilayer technology of production has been proven to modify the structure of raw material from crystalline to micellar with consequent benefits in terms of bioavailability and solubility.



**SEM crystalline Iron image (500x magnification)**



**SEM crystalline Vitamin C image (500x magnification)**



**SEM crystalline Iron + Vitamin C PHYTOBILAYER (500x magnification)**

### Suitable for different active ingredients

#### Active molecules

- Glutathion

#### Minerals & Vitamins

- Iron + Vitamin C

#### Herbal extracts

- Berberin
- Black Pepper
- Rhodiola

### Our result: bioavailability of liposomal Iron (Caco-2 cells)

In a published paper, different models were applied to evaluate the bioaccessibility of Iron, with liposomal Iron showing the highest availability.

This result can be related to the higher stability of Fe (II) complex during gastrointestinal transit, so Iron isn't subjected to the physiological oxidation process to ferric ions.

This high stability is reflected in the better bioavailability of Phytobilayer Iron as highlighted by the Caco-2 model used to quantify the Iron absorption.

### Percentage of iron absorption using Caco-2 cells model

