Liposomes 101

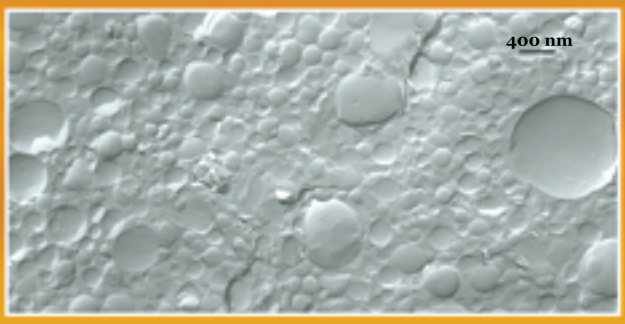
Liposomal vesicles are similar to a water filled balloon, albeit much smaller. The thin balloon wall would be the vesicle and the water inside would be the nutrient you wish to deliver. Here are three basic points when choosing ascorbic acid liposomes.

1. Liposomes yielding 1 gram of vitamin C must use at least 350 mg PC (Phosphatidyl Choline). Lipid (PC) content and quality is critical—one shortcut and you won't make liposomes.
2. Liposome size is important. Undersized vesicles will hold very little nutrition, oversized vesicles cannot absorb intact through the intestinal tract. The optimal range is 100 to 400 nanometers to balance payload and absorption. Look for the majority of vesicles to be under 400 nm.
3. SEM (Scanning Electron Microscope) images for confirmation: You should see a mixture of concave and convex vesicles as proof of spherical vesicle formation. The image helps verify points 1 and 2 above.

Discussion: When you purchase liposomes you want to be certain you have the genuine product. Comparing these three points (PC content, Vesicle size and SEM imaging) can help ensure you are using a quality manufacturer. Empirical Labs manufactures liposomes in-house to ensure the highest quality for our customers.

Properly Formed Liposomes

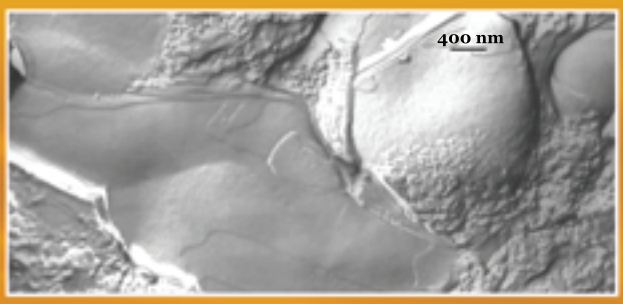
Empirical Labs genuine ascorbic acid liposomes



1. Label states 400 mg PC per dose. Expect an abundance of well formed vesicles.
2. Average vesicle size is well under 400 nm. About 270 nm average. A small percent of larger vesicles are present. Absolutely no frothy liquid—no emulsion here.
3. Image displays perfect spherical vesicle formation. Notice both convex and concave vesicles with no froth or foam around them—excellent proof of proper vesicle formation. This was made properly and will be a liposome when you buy it.

Not Real Liposomes—See the Difference?

Manufacturer X claiming ascorbic acid liposomes



1. Label does not state PC content. Nothing to verify. Not a good indication.
2. Vesicle size is HUGE. Short axis of large vesicle is 6 times too large for direct absorption. Frothy appearance of surrounding liquid—that is indicative of an emulsion.
3. Image shows globs, not vesicles. Look at the multi-layers of lipid on the large 'vesicles'—they aren't vesicles, they are just globs of lipid. No liposomes here, just an emulsion.

All images to scale, using identical preparation technique.

Ready for improved Vitamin C?

What if you had an oral delivery system that:

1. Promotes absorption using sub-microscopic vesicles. These tiny 'balloons' can be absorbed into the bloodstream.*

2. May deliver delicate or poorly absorbed molecules to the bloodstream, bypassing regular enzymatic digestion, protecting both the molecule and your digestive tract.*

3. Is a healthful delivery system—using 400 mg PC (phosphatidyl choline) per dose. Some companies use de-oiled lecithin—this makes an inexpensive emulsion, not real liposomes. True liposomes flow because the spherical nanoparticles roll like tiny ball bearings.*

What if this dream product was already developed and ready to use?

Carefully produced in oxygen-free environment. Glass bottle ensures product remains stable unrefrigerated until opened. AOS (Anti-Oxidation System) maintains integrity for one month after opening.

Empirical Labs
Nutrition Your Body Needs

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* These statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease.