



# Pharma Manufacturing – Liposome Drug Manufacturing Technologies

Case Study

<b>Client</b>	A mid-size CRO
<b>Industry</b>	Pharmaceutical manufacturing
<b>Products</b>	Liposome drug formulations

## Context

- A European pharma client wanted to gain information regarding new formulation developments undertaken in the field of liposome drugs.

## Key Business Questions

- What are the competitor activities in terms of technological advancements, development pipelines, and trends?
- What process technologies are being developed for liposome drug manufacturing?
- Which are the latest regulatory guidelines for liposome formulations? Are there any upcoming regulations?

## Engagement Scope

1

### Technology Landscape

- What are the key liposome drug formulation technologies and how is their demand expected to be over the next 5 years?
- What novel technologies are being developed to make the process of liposome drug formulation more efficient and productive?
- What are the key deciding factors in material selection for liposome drug formulation?
- How regulatory guidelines are evolving over time to deal with current issues related to liposome formulations?

2

### Competitor Landscape

- What is the current global scenario for liposome drug formulations?
- Who are the key players and what is their current status in terms of drug formulations?
- Who are the current suppliers of liposome formulation ingredients?
- What process technologies are being developed for liposome manufacturing and by whom?

3

### Key Findings and Conclusions

- What are the critical success factors determining the safety and effectiveness of liposome formulations?
- What are the regulatory challenges and how regulatory reforms are adapting to make CSTDs more safe?
- What process technologies have the potential to upscale for industrial manufacturing?

4

### Geographical Scope

- North America
- Europe (EU-5)



# Research Methodology

## Secondary Research

- Conducted extensive desk research through various sources –
  - PubMed, Google Scholar, Scientific Journals, IEEE, Regulatory/Technology Reviews, and Industry Magazines
  - Manufacturing Technology Conferences, News, Industry Reports, and Blogs
  - Company & Products Databases, Company & Regulatory Websites, and Thomson Innovation

## Benefits to Client

- The client used insights generated from the study to minimize development risks associated with liposomal product development and its scale-up, which, in turn, helped in streamlining R&D efforts and resources.

## Sample Analysis

### 1 Liposome Manufacturing Technologies

**Classification of liposomes**  
 An overview of liposome classification based on structure, composition, application, etc.

**Consideration during Excipient Selection**  
 Pharmacological & toxicological properties of liposomes vary significantly with changes in formulation.

**Liposome Manufacturing Methods (1/3)**  
 Manufacturing Approaches

Method	Advantages	Disadvantages
Thin Layer Evaporation	• Simple and easy to operate	• High temperature and long time
High Pressure Homogenization	• High efficiency	• High energy input
Microfluidics	• Precise control of particle size	• High cost

### 2 Regulatory & Technology Assessment

**Regulatory & Technology Assessment**

**Technology Mapping & Analysis**  
 An overview of technology mapping and analysis for pharmaceutical development.

**Supercritical Reverse Phase Evaporation**  
 A detailed diagram and text describing the process of supercritical reverse phase evaporation for liposome manufacturing.

# Thank you

## **North America**

55 Madison Ave, Suite 400  
Morristown, NJ 07960  
USA  
T: +1 212 835 1590

## **Europe**

328-334 Graadt van Roggenweg  
4th Floor, Utrecht, 3531 AH  
Netherlands  
T: +31 30 298 2108

## **United Kingdom**

5 Chancery Lane  
London EC4A 1BL  
United Kingdom  
T: +44 207 406 7548

## **Asia Pacific**

Millennium Business Park  
Sector 3, Building # 4, Mahape  
Navi Mumbai 400 710  
India  
T: +91 22 6772 5700