

Liposomes composed
of one or more lipid
bilayers



Liposomes was first explained by British hematologist Dr Alec D Bangham FRS in the year 1961 and was published in the year 1964, at the Babraham Institute, which is located in Cambridge.

Liposomes are colloidal and vesicular structures composed of one or more lipid bilayers with a central core of equal numbers of aqueous solution. The word liposome is obtained from two greek words namely the “ Lipos” which means fat and “ Soma” which means body. liposomes are concentric bleeder vesicles in which an aqueous volume is entirely enclosed by a membranous lipid bilayer. Membranes are usually made of phospholipids, which are molecules that have a hydrophilic head group and a hydrophobic tail group.

The head is attracted to water, and the tail, which is made of a long hydrocarbon chain, is repelled by water¹. When phospholipids are dispersed in water, they spontaneously form closed structure with internal aqueous environment bounded by phospholipid bilayer membranes, this vesicular system is called as liposome². The phospholipid bilayer is formed when the hydrophobic tail of both layer faces each other. Liposomes are biocompatible, biodegradable and target drug to organ systems. Liposomes technology is applied in numerous fields, such as pharmaceuticals, cosmetics, foods, detergents, textiles, and other applications, because of the ability to liberate the encapsulate slowly^{3, 4}. Liposomes can be composed of naturally derived phospholipids with mixed lipid chains (like egg phosphatidylethanolamine) or of pure surfactant components like DOPE (dioleoylphosphatidylethanolamine).

Liposomes usually but not by definition, contain a core of aqueous solution ; lipid spheres that contain no aqueous materials called micelles, however , reverse micelles can be made to encompass an aqueous environment (5).

Based upon the composition and the molecular structure , liposomes can separate hydrophobic or hydrophilic molecules from the solution (8, 9).

These vesicles are not strong formations but rather are fluid entities that are complex supramolecular assemblies. Because of their dynamic properties and relatively easy manipulative ability, liposomes have been used widely in the analytical sciences as well as for drug and gene delivery.