Liposomes are small artificial membranes, usually composed of one or more phospholipid bilayers, that can be used to deliver drugs. They are widely used in the pharmaceutical industry for their ability to encapsulate and protect drugs, as well as to deliver them to specific sites in the body. Liposomes can be classified into two types: multilamellar vesicles (MLV) and unilamellar vesicles. Unilamellar vesicles can also be classified into two types: unilamellar liposomes and unilamellar vesicles.

Unilamellar liposomes have a single phospholipid bilayer sphere enclosing the aqueous solution. The size of the vesicle is an important parameter in determining the circulation half-life of liposomes, as larger vesicles tend to have longer half-lives. The size and number of bilayers in liposomes can also be classified into one of two categories: small or large.

Liposomal encapsulation is becoming an increasingly popular method for drug delivery. It allows for the protection of drugs from degradation and provides a controlled release profile. The size and composition of liposomes can be customized to target specific tissues and organs. Liposomes can be prepared using various methods, including high-pressure homogenization, extrusion, and reverse-phase evaporation.

Advantages of liposomal formulations include protection from oxidation and degradation. This protective phospholipid shield remains undamaged until the targeted site is reached. The liposome formulation can then be degraded, releasing the drug. Liposomes can also be used to deliver drugs to specific sites in the body, such as the bloodstream or the lymphatic system.

Disadvantages of liposomal formulations include a higher production cost and the need for a more complex formulation process. Liposomes can also be susceptible to aggregation and instability, which can affect their drug delivery properties. Additionally, some liposomal formulations may be susceptible to antibodies or immune responses, which can affect their efficacy.

In conclusion, liposomes are a versatile and promising system for drug delivery. Their ability to encapsulate and protect drugs, as well as their potential for site-specific delivery, make them an attractive option for the treatment of various diseases. Further research is needed to improve their stability and efficacy, as well as to develop new methods for their preparation and use.
Liposomal drug delivery systems provide steady formulation, provide better pharmacokinetics, and reduce toxicity of drugs. By using the stealth properties of liposomes, tumor-specific targeting of liposomes can be achieved. The most effective way of tumor targeting is the use of liposomes that are conjugated with monoclonal antibodies that can specifically bind to epitopes overexpressed on tumor cell membranes. Liposomes can be designed to target tumors by incorporating tumor-specific ligands such as folate, transferrin, or galactose, which are expressed on the surface of tumor cells. Tumor-targeting liposomes can also be engineered to release their contents only in the presence of certain intracellular enzymes or proteins that are overexpressed in tumor cells. This allows the delivery of therapeutic agents to the tumor site, while minimizing the effects on normal tissues. The use of liposomes for tumor targeting represents a significant advancement in the field of cancer therapy, as it allows for a more personalized and effective approach to treating cancer.