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# RECENT TRENDS IN NOVEL DRUG DELIVERY SYSTEM

**Asha Vitthal Manchuke**
Resercher
Email -ashamanchuke06@gmail.com

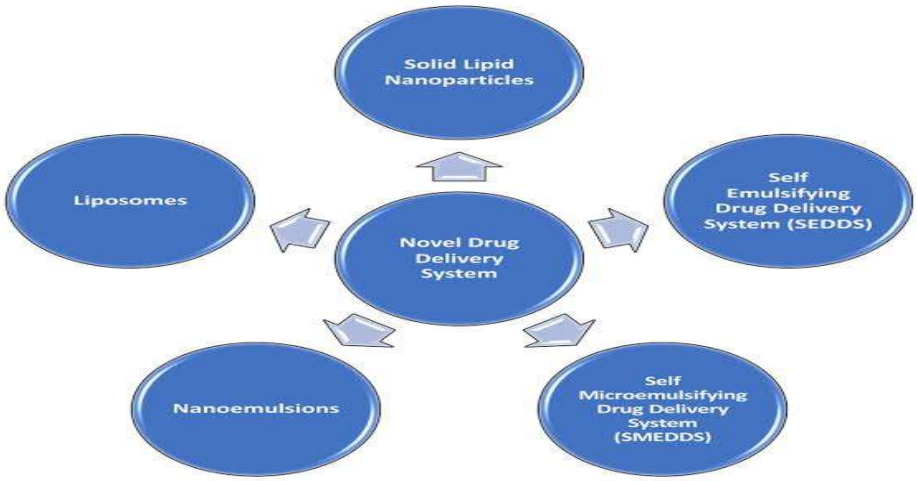
**Abstract**:

Novel technology had been developed recently for drug delivery systems Now day's Recent advances in the understanding of pharmacokinetic & pharmacodynamic behaviour of drug have offer a more rational approach to the development of optimal drug delivery system. Novel drug delivery systems can consist of those based on physical mechanisms and those based on biochemical mechanisms. In the form of a Novel Drug Delivery System a present drug molecule can get a new life. An accurately designed Novel Drug Delivery System may be a main enhance for fixing the troubles associated toward the release of the drug at particular site with particular rate. But now days with the development with inside the technology, novel drug delivery systems (NDDS) open the door toward the improvement of natural novel drug delivery system. This article covers the basic information regarding Novel Drug Delivery Systems.

**Key words**: phytosome, liposome, nanoparticles, niosome

## INTRODUCTION NOVEL DRUG DELIVERY SYSTEM:

It is defined as new approach that combines innovative development, formulations, new technologies, novel methodologies, for delivering pharmaceutical compounds in the body as needed to safely achieve its desired pharmacological effect.




## Advantages of novel drug delivery system

1. Controlled delivery by maintaining desired drug concentration and controlled rate
2. Accurate dosing.
3. Enhanced efficacy and safety.

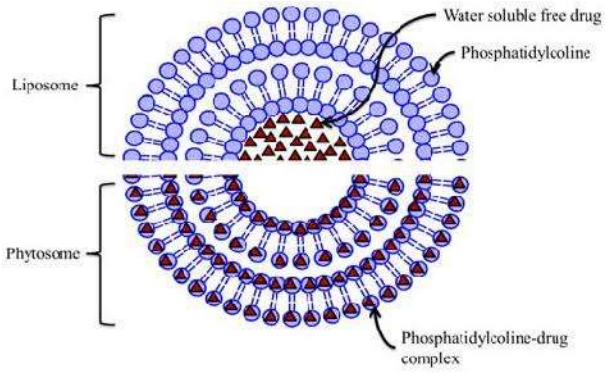
4. Site/Target-specific delivery of drug with an optimum dose
5. Decreased toxicity/side effects.
6. protection from toxicity.

**Recent developments in novel drug delivery system**

- Phytosome
- Liposome
- Nanoparticles
- Niosomes
- Nanoemulsions
- Microsphere

**1.Phytosome:**

Phytosomes are phospholipids-primarily based totally drug delivery system has been determined promising for natural drug delivery. Complexing the polyphenolic phytoconstituents withinside the molar ratio with phosphatidyl choline consequences in a new natural drug delivery system, recognized as "Phytosome".




**Advantages of phytosomes**

1. It enhances the absorption of lipid insoluble polar phytoconstituents.

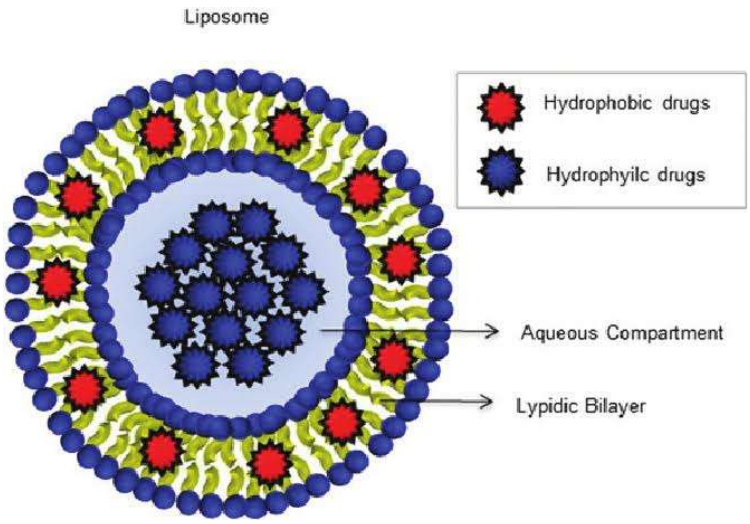
2. Appreciable drug entrapment.

3. As the absorption of active constituent is improved, its dose requirement is also reduced.

thinside the formation of lipid complex with higher stability and bioavailability.(51)

**2. Liposomes**:

Liposomes are defined as shape consisting of one or greater concentric spheres of lipid bilayers separated by water or aqueous buffer compartments.




**Advantages of Liposomes**

1. Good solubilisation power.

3. Exhibit excellent chemical and organic stability.

4. Reduce their uptake through macrophages.

5. The high biocompatibility.
6. The easiness of preparation.

**3.Nanoparticles**

Nanoparticles (including nanospheres and nanocapsules of size 10-200 nm) are in the solid state and are either amorphous or crystalline. They are able to adsorb and/or encapsulate a drug, thus protecting it against chemical and enzymatic degradation.

**Advantages of herbal nanoparticle delivery system**

1. Nanoparticulate system delivers the herbal formulation directly to the site of action.
2. Increased efficacy and therapeutic index.
3. Increased stability via encapsulation.
4. Improved pharmacokinetic effect.
5. Producible with various sizes, compound surface properties [19].

**4.Niosomes:**

Niosomes are multilamellar vesicles formed from non-ionic surfactants of the alkyl or dialkyl polyglycerol ether class and cholesterol.

- **Advantages of niosome**
  Niosomes have better patient compliance and higher therapeutic impact than conventional oily formulations.
  Niosomes show managed and sustained release of medicine because of depot

formation.
More bioavailability than conventional dosage forms.
Niosomes are more stable than liposomes.
Niosomes can increase the permeation of drugs via the skin

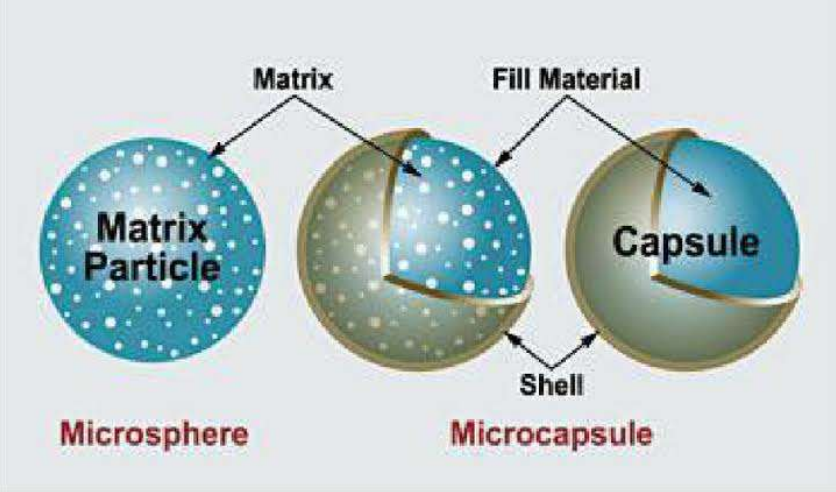
**5. Nanoemulsions**

Nanoemulsions are a colloidal particulate system withinside the submicron size range appearing as providers of drug molecules.

**Advantages of Nanoemulsion**

1. Provides aqueous dosage form for water insoluble drugs.
2. Eliminates variability in absorption.
3. Increases bioavailability.
4. Increase the rate of absorption

**6.Microspheres**




Microsphere comprises of small spherical particles, with diameters in the micrometer range, typically 1 µm to 1000 µm (1 mm). Microspheres are sometimes referred to as micro-particles. Microspheres can be manufactured from various natural and synthetic materials. Glass microspheres, polymer microspheres and ceramic microspheres are commercially available. Microspheres are classified as biodegradable or non-biodegradable. Biodegradable microspheres include albumin microspheres, modified starch microspheres, gelatin microspheres, polypropylene dextran microspheres, polylactic acid microspheres, etc. According to the current literature reports on non-biodegradable microspheres, polylactic acid is the only polymer approved to be used by people, and it is used as a controlled-release agent. Solid and hollow microspheres vary widely in density and therefore are used for different applications.

## Conclusion

Novel drug delivery system not only reduces the repeated administration to overcome non compliance, but also helps to increase the therapeutic value by reducing toxicity and increasing the bioavailability, and so on. Advantages of Novel Drug Delivery

System are: Optimum dose at the best time and proper location, affordable use of expensive drugs, excipients and discount in cost, useful to patients, better clinical aid, stepped forward consolation and commonplace of living.

## Reference

1. Vijaya Shanti, B., Mrudula, T. and Pavan Kumar, V., 2011. An imperative note on novel drug delivery systems. J NanomedicNanotechnol, 2, p.125
2. Nikalje, A.P., 2015. Nanotechnology and its applications in medicine. Med chem, 5(2), pp.081-089.
3. Niculescu-Duvaz, I. and Springer, C.J., 1997. Antibody-directed enzyme prodrug therapy (ADEPT): a review. Advanced drug delivery reviews, 26(2-3), pp.151-172.
4. Manabe, T., Okino, H., Maeyama, R., Mizumoto, K., Nagai, E., Tanaka, M. and Matsuda, T., 2004. Novel strategic therapeutic approaches for prevention of local recurrence of pancreatic cancer after resection: trans-tissue, sustained local drug-delivery systems. Journal of controlled release, 100(3), pp.317-330
5. Bandawane, A. and Saudagar, R., 2019. A review on novel drug delivery system: a recent trend. Journal of Drug Delivery and Therapeutics, 9(3), pp.517-521.