

A Review on Novel Herbal Drug Delivery

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Abstract: *The utilization of novel herbal formulations, such as polymeric nano particles, Liposomes, phytosomes, transfersomes and ethosomes, has been documented through a proactive approach and careful plant selections. I am currently involved in conducting research to discover new plant metabolites that have potential applications in the treatment of both human and animal health conditions. Diverse challenges associated with the conventional system of medicine has been addressed through the indentation of innovative herbal drug delivery system. The novel system aims to improve various aspects, including solubility, bioavailability, protection from toxicity, enhancement of pharmacological activity.*

Keywords: *Herbal, Novel drug delivery system.*

I. INTRODUCTION

In recent decades, significant emphasis has been placed on the advancement of innovative methods for delivering herbal drug through herbal drug delivery systems. The phytochemical carriers have been studied for effective delivery of herbal extract of ginseng etc. The formulation of any herbal extract by using Distillation, extraction, expression, fractionation, purification, infusion, Digestion, percolation, Maceration process.[1]

Necessity of NDDS In Herbal Drug

Modern medicine cures a particular disease by targeting exactly the affected zone inside a patient body and transporting drug to area. These are various approaches by which novel drug delivery can be achieved. [2] The drawbacks of traditional drug delivery techniques all are addressed in novel delivery technologies. Novel drug delivery system is a novel approach to drug delivery that addresses the limitation of the traditional drug delivery system. Drug delivery system is the method by which an optimum amount of the concerned drug is administered to the patient in such a way that it reaches exactly the site of action and starts working then and there.

II. ADVANTAGES OF HERBAL DRUG

- Site specificity.
- Improve tissue macrophages distribution.
- Enhancement of pharmacological activity of drug.
- Increase the bioavailability of drug.
- Sustained release of drug for specific period of time.

III. PHYSICOCHEMICAL PROPERTIES OF HERBAL DRUG

Description

It includes evaluation of plant by Colour, odour, size, shape, and special feature, like touch, texture, and so forth.

Loss On Drying :

10g of plant material was placed after accurately weighing it in a tarred evaporated dish. This was dried at 105 degree Celsius for 5 h and weighed. Drying and weighing was continued at 1 h interval until we got the constant weight.

IV. BIOLOGICAL PROPERTIES OF HERBAL DRUG

The herbal drug various biological properties are follows: Cancer, cardiovascular disease, Arthrities, Alzymer disease, Digestive Disorders, Vascular Disease, Anti Arrhythmic, Asthma, Diabetes

Types Of Novel Herbal Drug Delivery System :

- Phytosomes
- Liposomes
- Niosome
- Transfer some
- Ethosomes
- Microsphere
- Microemulsion
- Nanoparticles

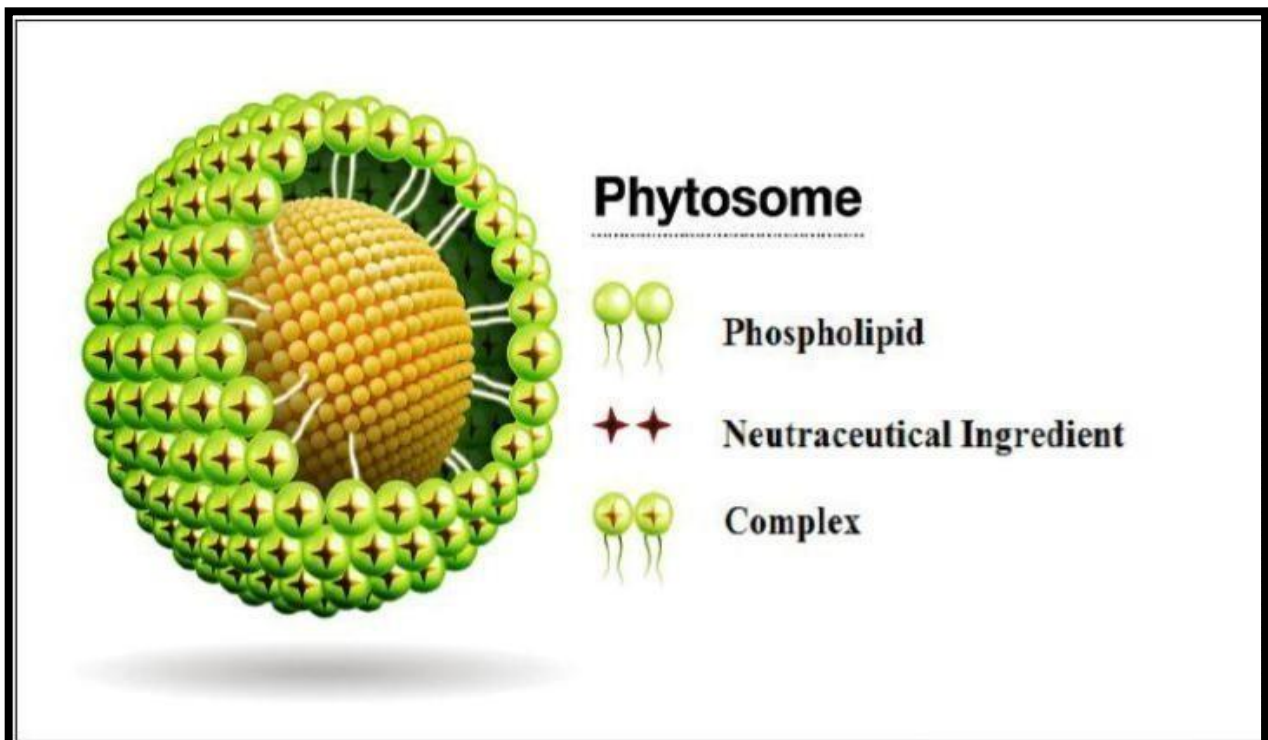
Phytosomes:

The 'Phyto' means the plant while 'some' means cell like.

Phytosomes are little cell-like structure.

Most active pharmaceutical ingredient of herbal drug are polar in nature or water soluble in nature due to that problem in absorption, restricts the utilisation of these type of compound which ultimately decreases the bioavailability.[9]

The Phytosomes substantially improve the bioavailability of these hydrophilic active compound. Phytosomes is a novel form of formulation which contain the biologically active phytoconstituents of herb extract complexes which is lipid compatible.



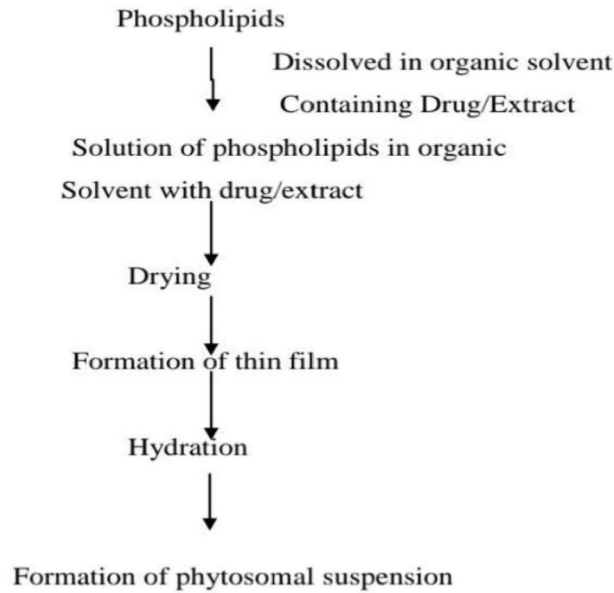
Advantages:

1. Enhance bioavailability of derma care product.
2. Additional nutritional profit of phospholipids.
3. Considerable drug intrapment.
4. It insure the predetermined rate of drug delivery to the individual tissue.[6]

Disadvantages :

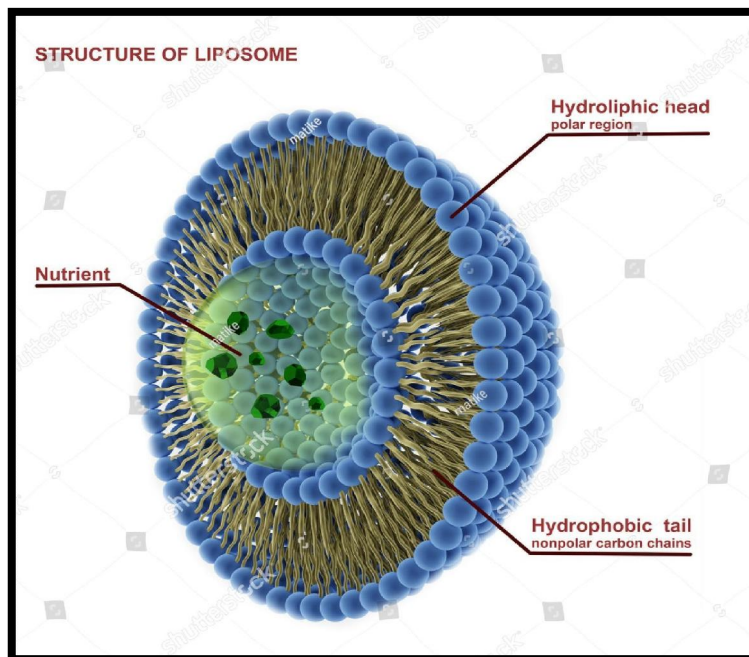
1. Despite of several advantages of phytosomes some fatal disadvantages such as phospholipids can induce proliferation on MCF-7 breast cancer cell line has been reported.

Method for preparation for phytosomes



Liposomes :

- In 1956 some researchers published first description on swollen phospholipid system.
- Liposomes can be classified on the basis of size and number of bilayers.
- Liposomes are lipid base drug delivery system.
- Cholesterol is important for maintaining the stability of liposome.[7]



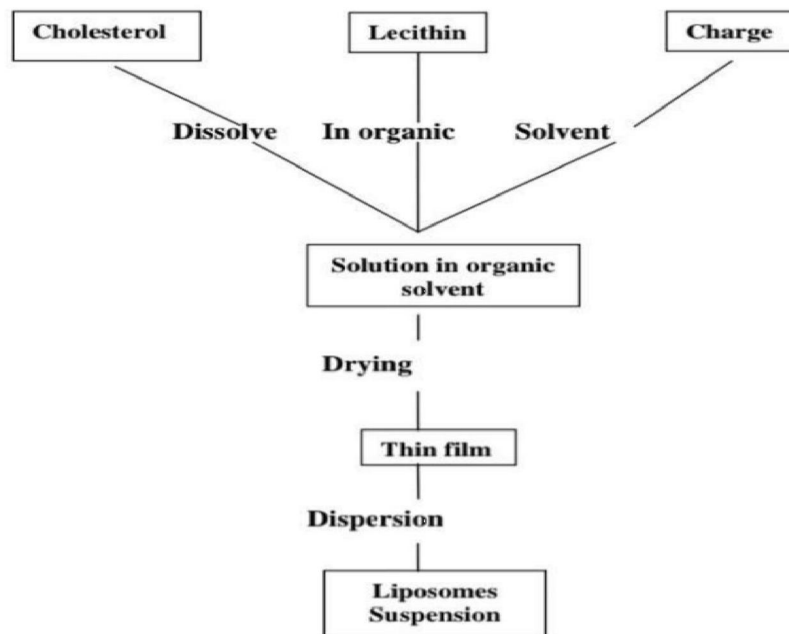
Advantages of liposomes :

- Increase the efficacy and therapeutic index.
- Increase the stability via encapsulation .
- Reduction in toxicity of the encapsulated agent.
- Site avoidance effect.

Disadvantages of liposomes :

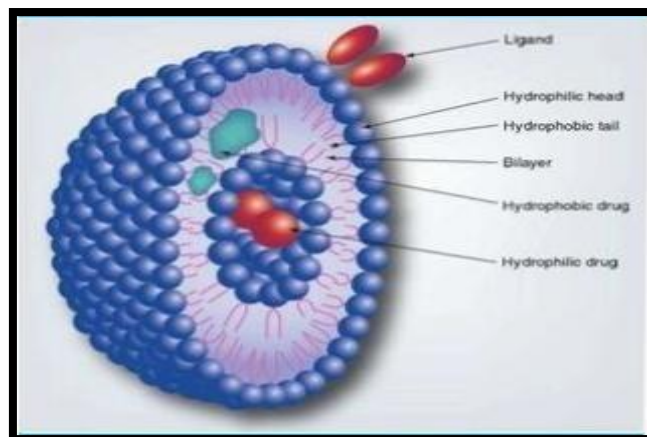
- Low solubility
- Short half life.
- Production cost in high.[3]

• Method of preparations Liposomes:



Niosomes

Structure of Niosomes



Advantages :

- Niosomes provide targeted drug delivery system.
- Enhance the bioavailability and skin penetration.
- Improve the therapeutic effect of drug.

Disadvantages :

- Time consuming process.
- Specialized equipment's are required for processing
- Physically unstable [12]

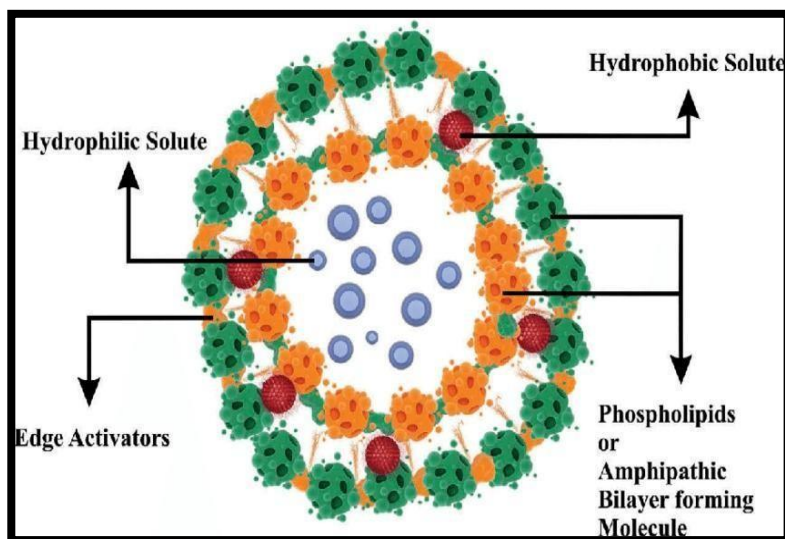
Method of preparation :

1. Hand shaking method (Thin film hydration technique).
2. Micro fluidisation.
3. Reverse phase Evaporation (REV).
4. Ether injection method.

Transfersomes:

- 1) Gregor Cevc introduced the definition and idea of transfersome in 1991.

Structure of transfersome



Advantages:[13]

1. Transfersomes can deform and pass through narrow constriction Without measurable.
2. They have high entrapment efficacy ,in case of lipophilic drug Near to 90%.
3. This high deformability gives better penetration of intact Vesicles.

Disadvantages :

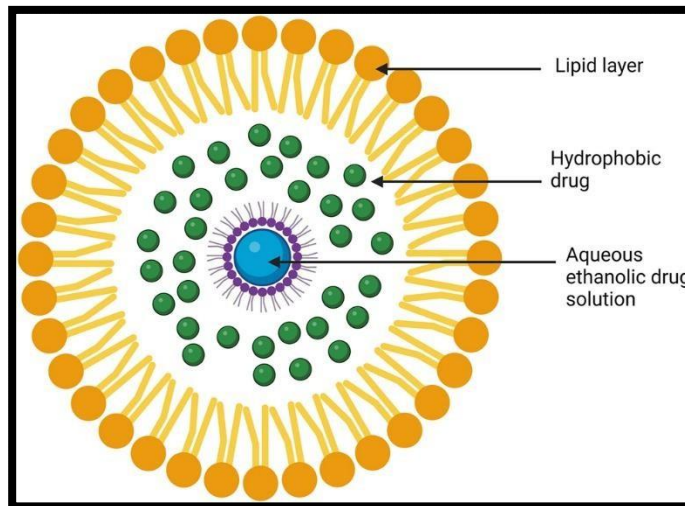
Purity of natural phospholipids is another criteria militating against adoption of transfersome as drug delivery vehicles. Transfersomes formulations are expensive

Ethosome:

Ethosomes are ethanolic liposomes ,it's define as the Noninvasive delivery carriers that enabledrugs to reach deep into the skin layers and/or the systemic circulations.

Ethosomes delivered the drug in the form of a cream, gel for patient comfort .

Structure of Ethosomes



Microspheres :

They are called as microbeads and -beads.

It is a spherical shaped particle having size ideally 1-300 micro m.

Advantages

- 1.Improvement of protein and peptides drug delivery.
- 2.Ability to bind and release of high concentration of drug.
- 3.First pass effect can be avoided.

Disadvantages :

- 1.The fate of polymer matrix and it's effect on the environment.
- 2.There are differences in release from one to another dosage form.
- 3.Reproducibility is less.[12]

Microemulsion:

1. The two basic types of microemulsions are direct and reversed.
2. Microemulsions are O/W type emulsion having the size of several microns.

Advantages :

Stable at room temperature .
Low surfactant need to achieve high efficiency.

Application of novel herbal drug delivery system:

NaturalSource	Phytoconstituent	Phytosomal	Dose &	Mecganismof action
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	Complexed	Product	Dosage form	
Silybum maraniun (milk thistle)	Silybin, Silydianin.	Silybin Phytosome TM	120-200 mg	Prevent the destructions of glutathione in liver.
Panax ginseng (Ginseng)	Ginsenosides	Gingseng Phytosome TM	150 mg	Increase catalase superoxidedismutase.
Camellia sinensis(Tea)	Epigallocatechin, Catechin	Green tea Phytosome TM	400 mg	Inhibit urokinase enzyme which is responsible for increase tumor size.

V. CONCLUSION

Several therapeutic potential are there in plant based substance or herbal medication which should be examined using cutting edge drug delivery technology. This study provide information , application and innovative drug delivery system of herbal medicine as well as on the state on the market at the time of writing. Designing NDDS for natural compound can do this. Compared to thier synthetic cousin ,herbal excipient are less costly easily accessible and non - tixic.

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