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REVIEW ON: A NOVEL TECHNIQUE FOR DELIVERING HERBAL DRUG

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ABSTRACT

Hydrosome's, liposomes, niosomes, proniosomes, transfer osomes, ethosomes, nanoparticles, microspheres, and other innovative herbal drug delivery systems are among the several forms available. innovative strategy for drug delivery that overcomes the drawbacks of traditional drug delivery methods It is possible to improve the bioavailability, solubility, and efficacy of herbal medicines by using a revolutionary drug delivery system. This can also improve the stability of the pharmaceuticals, prevent toxicity, and shield them from physical and chemical deterioration. Adding cutting-edge drug delivery techniques to herbal remedies is based on this fundamental idea. Niosomes, liposomes, phytosomes, and medicines, for instance, can all be made with liposomes.

Keyword- Noisome, proniosomes, phytosomes.

I. INTRODUCTION

Since ancient times, preparations of plants or plant parts have been used in medicine. Nowadays, the majority of people on the planet use phytomedicines. In the modern world, herbal medicines are gaining popularity since they can be used to treat illnesses, improve the therapeutic efficacy of medications, and lessen their toxicity and adverse effects. Novel drug delivery systems—the word "novel" denotes innovation and new form—deliver the medication at a predetermined rate to the right site of action, allowing for regulated and sustained release.1. The two crucial requirements should be met by the nano carriers The first is administering the medication during the course of treatment at a predetermined rate. Second, it need to allow the intended site of action for the active ingredient in herbal medications[2]. Herbal medicine nano carriers may be improved in the future and used to address issues pertaining to herbal medications. To improve the drug's bioavailability.

II. ADVANTAGES 0F HERBAL DRUG

Minimal possibility of adverse reactions Generally speaking, herbal medications are safer to use, well-tolerated by the patient, and have less side effects and unforeseen consequences than traditional treatment. Efficiency When traditional treatment is ineffective for a long-standing health issue, herbal remedies are more effective. Herbs and complementary therapies used to treat arthritis are one example. The popular prescription medication Vioxx, which is used to treat arthritis, was withdrawn because of a higher risk of cardiovascular problems.On the other hand, there are less adverse effects while using herbal remedies for arthritis. These remedies include dietary adjustments such as the addition of common herbs, the removal of nightshade family veggies, and a decrease in the intake of white sugar. Reduced expense Herbal remedies are far less expensive than prescribed drugs. The expense of prescription medications is significantly increased by research, testing, and marketing. In general, herbs are less expensive than medications.

III. LIMITATION OF HERBAL DRUG

Not appropriate for many disorders. Modern medicine is more effective in treating major illnesses and accidents than herbal or alternative remedies. An herbalist would be unable to cure significant trauma, such as a broken limb, or to heal appendicitis or a heart attack as successfully as a traditional doctor who uses sophisticated diagnostic testing, surgery, and medications.1. A lack of dosing directions. Self-treatment with herbal medications may involve a number of risk risks. Furthermore, failure to properly administer doses may result in an overdose. 2. Poison danger from wild herbs Consumption of herbal medications without proper identification of the plant or usage of the incorrect section of the plant may result in poisoning. Lack of

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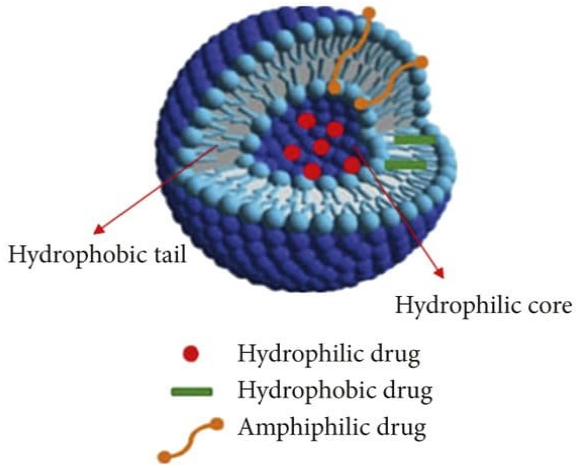
regulation Herbal items are not strictly regulated, therefore consumers may purchase inferior grade herbs. The quality of herbal items may differ between batches, brands, and manufacturers. This can make it significantly more difficult to administer the appropriate dose of a herb.

- **NIOSOMES**

Niosomes are multi-lamellar vesicles generated by nonionic surfactants, cholesterol. They include both hydrophobic and hydrophilic moieties, allowing them to accommodate medicinal molecules of varying solubility. Niosomes have the ability to minimise systemic toxicity by encapsulating and removing therapy materials from the body through delayed drug release. Niosomes are similar to liposomes in structure, possessing a bilayer. It traps hydrophobic and lipophilic medicines in an aqueous or organic layer. The primary distinction between liposomes and niosomes is their structure. Niosomes have a non-ionic surfactant layer, whereas liposomes have a phospholipid layer.

STRUCTURE OF NIOSOMES



METHOD OF PREPARATIO OF NIOSOMES

1. The hand shaking method produces vesicles with a bigger diameter (0.35-13 nm) than the ether injection method (50-1,000 nm). The Reverse Phase Evaporation (REV) method can manufacture small-sized niosomes. The microfluidisation process produces more homogenous and small-sized vesicles. New method of preparation of neosomes
2. Niosome formation using the Proniosome Method. Proniosomes, also known as dry niosomes, are dry-form formulations of non-ionic surfactant vesicles that may be transformed into niosomes following hydration in a short time and are currently frequently employed in the formulation of niosomes due to their good stability.

How are neosomes made?

Niosome structures are formed by combining surfactant with cholesterol, which is then hydrated in water. The bilayer in niosomes is prepared for a nonionic surfactant, with its hydrophilic ends exposed on the outside and interior of the vesicle, while the hydrophobic chains express themselves within the bilayer.

Excipients use to formation of niosomes

1) *Nonionic surfactants:* These are the main components of niosomes. Examples are the Span (20, 40, 60) and Tween (20, 80) series. They create the lipid bilayer of niosomes, which contributes to their stability and membrane properties.

2. *cholesterol:* Cholesterol is commonly added to niosome formulations to improve membrane stiffness and stability. It serves to regulate the fluidity and permeability of niosomal membranes.

3. *Hydrophilic polymers:* Polymers such as polyethylene glycol (PEG) can be used to enhance the stability and circulation time of niosomes in biological systems. PEGylation can also diminish opsonization while improving niosome biocompatibility.

4)Edge activators: These chemicals improve the flexibility and deformability of niosomal membranes. Examples include bile salts (e.g., sodium cholate, sodium deoxycholate) and lipids. They are frequently employed in tiny quantities to improve niosome properties.

5)Buffering agents: Buffering agents, such as phosphate buffers, are employed to keep the pH of the niosome formulation within a specific range, which is critical for stability and biological compatibility.

Liposome classification is based on structural characteristics.

1. MLV (Multilamellar large vesicles)
2. OLV: Oligolamellar vesicles.
3. UV: Unilamellar vesicles.
4. SUV: Small unilamellar vesicles.
5. MUV-sized unilamellar vesicles.
6. LUV: Large unilamellar vesicles.
7. GUV: Giant unilamellar vesicles.
8. MVV -Multivesicular vesicles

Liposome classification based on method of liposome synthesis.

1. REV – A single or oligolamellar vesicle formed by the reverse phase evaporation process.
2. MLV / REV – Reverse phase evaporation produces multilamellar vesicles.
3. SPLV: Stable plurilamellar vesicles.
4. FAT-MLV: frozen and thawed MLV.
5. VET- Vesicles made by the extrusion process.
6. FUV-Vesicles created during fusion

IV. CONCLUSION

Herbal drugs have been used all over the world since ancient times and are recognised by doctors and patients for their superior therapeutic value because they generate less side effects when compared to modern medications. Ayurvedic medications can be used in a more upright manner with more potency by using modern dose forms. Extensive research is being conducted in the area of new medicine delivery and targeting of plant actives and extracts. However, research in this field is still at the experimental stage.Many challenges in research, production, and application must be addressed. Furthermore, greater emphasis should be made to research on the carrier materials in order to develop more acceptable carriers that can lower the toxicity of medications and boost.

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