



Short Communication

Herbosomes: A potent drug carrier

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ABSTRACT

Herbal medications have a wide range of phytochemical ingredients, the majority of which are flavonoids and terpenoids, which have a vivid range of applications. The use of polar phyto-constituents is restricted due to their poor absorption and bioavailability. Poor bioavailability can be overcome by developing a suitable drug delivery system, such as the herbosome (Phospholipids) based drug delivery system, which has been found to be promising for better and more effective drug delivery and can increase the rate and extent of drug absorption across the lipoidal bio-film. Herbosome is one of the phospholipid-based herbal drug delivery systems with a higher absorption and stability profile than the others. The herbosome has the potential to play a critical role in the value delivery of Phyto-constituents like flavonoids, and vitamin E. Herbosomes have a wide range of applications aside from homegrown diets and beauty care products. As a result of their medicinal use, several locations of herbosomes will be discovered in the future.

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1. Introduction

Polar or water soluble chemicals make up the majority of physiologically active plant components. Flavonoids, tannins, and glycosides are water soluble phyto-constituents that are poorly absorbed. They are impossible to absorb through passive diffusion due to their large molecular size or insufficient lipid content. Therefore, effectiveness of many phyto-medicines is limited since they are poorly absorbed when taken by mouth. Herbosomes are a type of lipid-based drug delivery system that incorporates phospholipids that are transformed into standardized active constituents of herbal extracts, boosting the bioavailability of water-soluble phyto-medicines such as phenolic compounds, flavonoids, and hydrophilic chemicals.¹

2. Method of Herbosome Preparation

Herbosomes are new complexes made by reacting one mole of flavolignans with 3-2 moles of natural or synthetic phospholipids such as phosphatidylcholine, phosphatidylethanolamine, or phosphatidylserine, either alone or in a natural combination in an aprotic solvent like dioxane or acetone. The herbosome complex can then be separated by spray drying or precipitation with non-solvents such as aliphatic hydrocarbons. The ratio between these two moieties in the complex development of herbosomes ranges from 0.5 to 2.0 moles. The ratio of phospholipids to flavonoids that is best is 1:1.^{2,3}

3. Pharmaceutical Approach of Herbosomal Technology

Herbosomes are cell-like structures formed by the stoichiometric reaction of phospholipids (phosphatidylcholine, phosphatidylserine etc.).

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Traditional herbal extracts provide better results than standardized extracts or polyphenolic components in a non-polar solvent in terms of absorption. Phospholipids are one of the most important building blocks of life and one of the most critical components of cellular membranes. In general, they're thought to be natural digestive aids and carriers for both polar and non-polar active chemicals. Phosphatidylserine, a feed for brain cells, and phosphatidylcholine, which aids in liver cell regeneration, are two examples of phospholipids with nutritional properties. Lipid-lowering soya phospholipids are utilized to generate stable liposomes, while hydrogenated phospholipids are employed to make stable liposomes. Because of their amphiphilic character, herbosomal formulations boost bioavailability.⁴

Plant extracts' active components are well-protected from digestive secretions and gut bacteria. As a result, herbosomal preparations lower the amount of standardized herbal extracts or phyto-constituents distributed in the body via many pathways, resulting in improved therapeutic efficacy.⁵

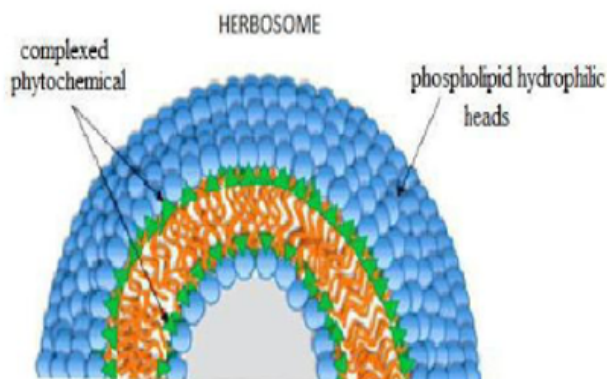


Fig. 1: Animated image of herbosome⁶

4. Evaluation of Features of Herbosomes

Physical size, membrane permeability, percentage of entrapped solutes, percentage of drug released, chemical composition, and quantity and purity of the starting material are all things to think about. Herbosomes have an impact on both biological and physical systems.

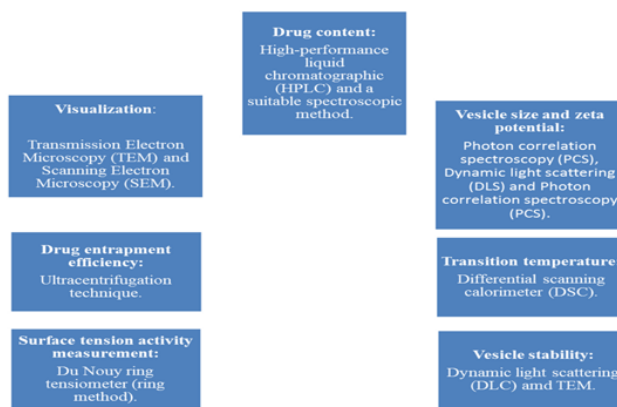


Fig. 2: Evaluation parameters for herbosomes^{3,7,8}

5. Merits and Demerits of Herbosomes

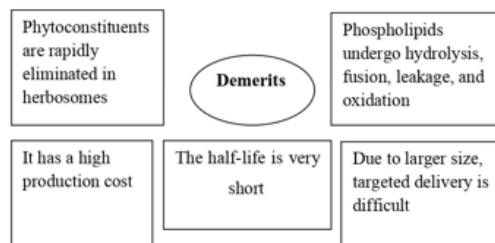
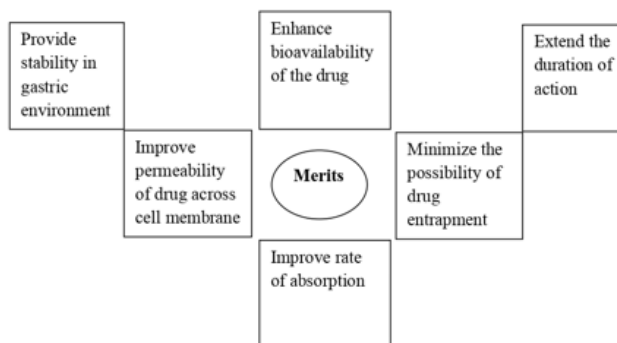


Fig. 3: Merits and demerits of herbosomes^{9,10}

6. Future Perspective

Herbosomes boost the in vivo bioavailability of herbal treatments that, despite positive in vitro results, have little impact in humans. Plant hydrophilic contents, such as flavonoids and other polyphenolic elements, have immense therapeutic potential, but their use in the treatment of a wide range of diseases and disease circumstances is limited due to their inability to cross lipoidal barriers. This difficulty was solved by mixing these phyto-constituents with dietary phospholipids, resulting in a herbal pharmaceutical formulation with sufficient lipid penetrability, higher concentration, and longer therapeutic levels in plasma, as well as a slower clearance rate.^{11,12}

7. Conclusion

Herbosomes are new formulations that increase the bioavailability of hydrophilic flavonoids and other related chemicals in the skin and gastrointestinal tract. It has a number of specific advantages over traditional formulations. Herbosome technology, in terms of its potential for usage in formulation technology and applications of hydrophilic plant chemicals, has a bright future. Standardized plant extracts or mainly polar phyto-constituents like flavonoids, terpenoids, tannins, and xanthenes, when blended with phospholipids like phosphatidylcholine, give rise to a new drug delivery technology called the herbosome, which has a much better absorption profile following oral administration due to improved lipid solubility, allowing them to cross the biological membrane, resulting in increased bioavailability. When compared to a typical plant extract, this means that more active constituents are present at the site of action (liver, brain, heart, kidney, etc.) at a similar or lower dose. As a result, the therapeutic effect is amplified, more apparent, and longer lasting. Several high-quality phyto-constituents have been effectively given in this manner, demonstrating exceptional therapeutic efficacy in both animal and human models. Herbosomes have recently been recognized as a high-value drug delivery mechanism. A thorough review of the literature revealed that several plant extracts (crude, partially purified, or fractionated) have been reported to have distinct major pharmacological or health promoting characteristics. These extracts can be standardized and synthesized as herbosomes for further exploration into their improved potential for sensible use. Herbosomes can be generated for many therapeutic objectives, such as preventative and health purposes as nutraceuticals, after screening and selection of possible extracts or ingredients from plants.

8. Source of Funding

None.

9. Conflict of Interest

None.

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