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A Review; Formulation and Evaluation of Phytosomes of Alistonia Scholaris

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Abstract: ***Presently phytosomes are used lot for drug delievery system they are increase bioavailability of the drug and reduce dosage form antidiabetic property is found in bark alistonia scholaris. Alistonia scholaris treats leprosy, diabetic and antihypertension from bark part of the alistonia scholaris we prepare the phytosomes that we will use in the formulation.***

Keywords: Phytosomes, alistonia scholaris, antidiabetic polymer, antioxident, rotary evaporater

1. Introduction

Diabetes mellitus is a systemic metabolic disease characterized by hyperglycemia, hyperlipedemia, hyperaminoacidemia, and hypoinsulinaemia it leads to decrease in insulin, secretion and insulin action. Currently available therapies for diabetes include insulin and various oral antidiabetic agents such as sulfonylureas, biguanides, αglucosidase inhibitors and glinides. In developing countries products are expensive and noteasily accessible. (1)

Although bark extract of Alstonia scholaris may have a direct antidiabetic effect by enhancing carbohydrate consumption or improving insulin receptor sensitivity, its antioxidant potential is an important factor that has to be investigated. (2) It was reported that phytosomes are cell like structures “Phyto” means plant while “some” means cell like. (4)

In the past few decades, considerable attention has been focused on the development of novel drug delivery system (NDDS) for herbal drugs. The novel carriers should ideally fulfill two prerequisites. Firstly, it should deliver the drug at a rate directed by the needs of the body, over the period of treatment. Secondly, it should channel the active entity of herbal drug to the site of action. Conventional dosage forms including prolonged - release dosage forms are unable to meet none of these.5

Symptoms

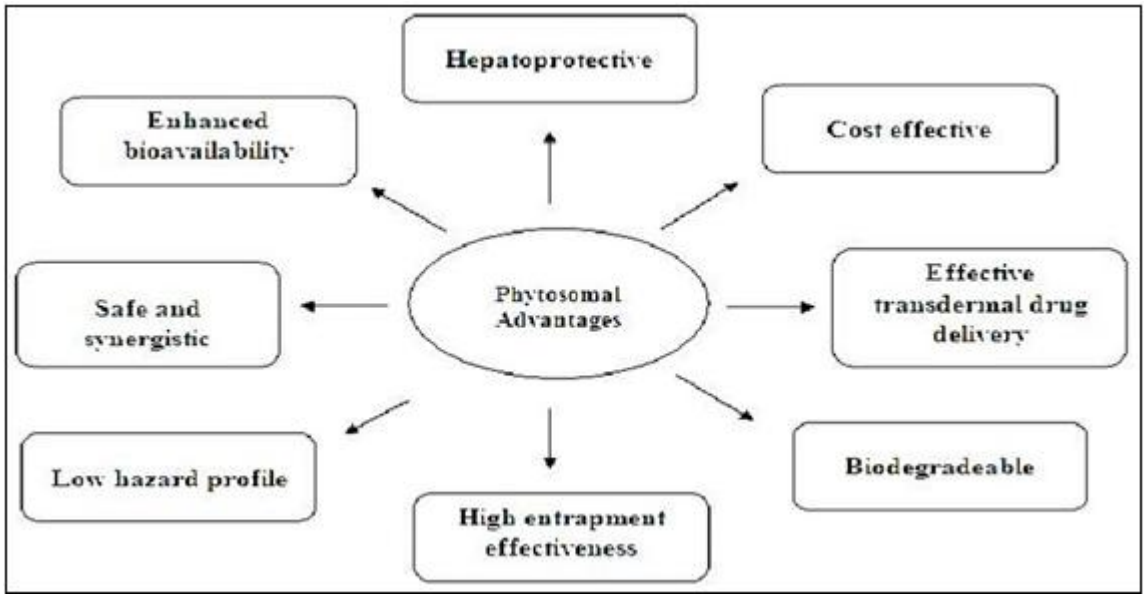
- Increased thirst
- Frequent urination
- Blurred vision
- Blurred vision
- Hunger
- Fatigue 6

Phytosmoes

Phytosomes are complex of phospholipids and natural active phytochemicals, bound in their structures, obtained by the reaction between phosphatidylcholine (or any hydrophilic polar head groups) and plant extracts in an aprotic solventthey protect active ingredient from destruction from gastric juices and gut bacteria. Besides acting as a carrier for polar compounds.

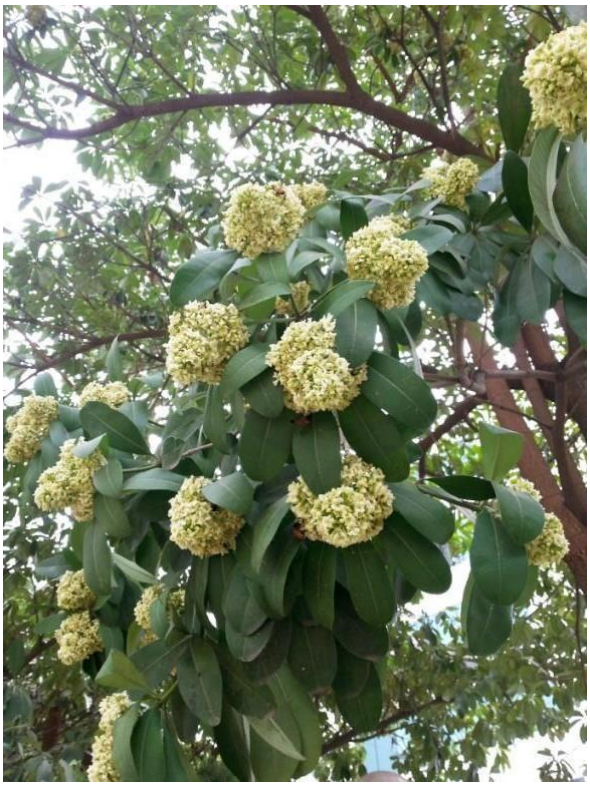
Advantages of phytosomes

- They enhance the absorption of lipid insoluble polar botanical extract through oral as well as topical route showing better bioavailability, hence significantly greater therapeutic benefit.
- They improve the solubility of bile to herbal constituent; (7.)
- As the efficacy increases the dosage requirement is also reduced.
- Time period of action is increased [8 - 9].
- The vesicular system is passive, non - invasive and is available for immediate commercialization [10].
- Phosphatidylcholine, an essential part of the cell membrane used in phytosome technology, acts as a carrier and also nourishes the skin [11].
- There is no problem with drug entrapment during formulation preparation.
- Also, the entrapment efficiency is high and moreover predetermined; because the drug itself forms vesicles after conjugation with lipid.



Alistonia Scholaris

Alstonia scholaris Linn. is an antimalarial (12) drug used in the marketed Ayurveda preparation Ayush - 64, NRDC, India. The plant Alstonia scholaris Linn. R. Br., belongs to the family Apocynaceae and is native to India. It grows throughout India, in deciduous and ever green forests and also in plains. The plant Alstonia scholaris R. Br. (Labiatae) is widely cultivated throughout India and found in Subhimalayan tract from the Jumna eastward ascending to 3000 feet. It is abundantly found in Bengal and South India. The bark of this tree is medicinally used as an astringent, tonic, anthelmintic, antiperiodic and febrifuge. [13] Recent report indicates that the plant has got bronchovasodilator activity. [14] However, there is no report on the anti - inflammatory activity of this plant though inflammation is a common occurrence in infective conditions. (15) Therefore, the aim of the present work is to evaluate, for the first time, the anti - inflammatory activity of Alstonia scholaris stem bark extract. (16)



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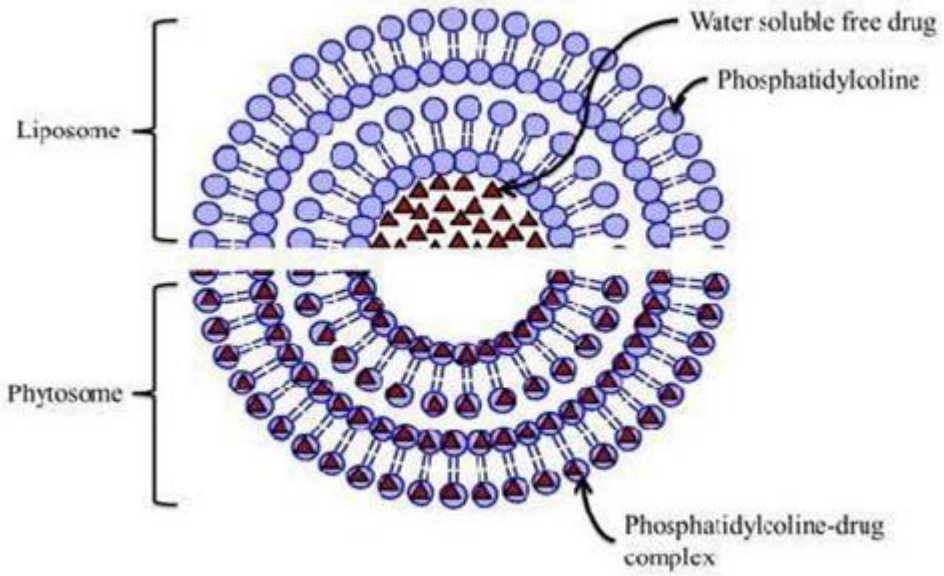

Figure 1: Difference between phytosome and liposome. The molecular organization of phytosomes (lower segment) liposome (upper segment)

Difference between phytosome and liposome

The fundamental difference between liposomes and phytosomes is that in liposomes the active principlen is dissolved in the medium contained in the cavity or in the layers of the membrane, whereas in the phytosome it is an integral part of the membrane, being the molecules anchored through chemical bonds to the polar head of the phospholipid. Liposomes are used primarily in cosmetics to deliver water soluble substances to the skin. A liposome is formed by mixing a water-soluble substance with phosphatidylcholine. No chemical bond is formed; the phosphatidylcholine molecules surround the water-soluble substance. There may be hundreds or even thousands of phosphatidylcholine molecules surrounding the water-soluble compound contrast with the Phytosome process the phosphatidylcholine and the individual plant components actually from complex depending on the substance. This difference results in Phytosomes being much better absorbed that liposomes. Phytosomes are superior to liposomes in skin care.

Preparation method

Phytosomes are generally prepared by adding accurate amount of phospholipid, i. e., Soya lecithin with herbal extracts in an aprotic solvent. Soya lecithin contains main constituent, i. e., Phosphatidylcholine which is having a dual function. Phosphatidyl part is lipophilic in nature and choline part is hydrophillic in nature. The choline part attached with hydrophilic chief active constituents, where as phosphatidyl part lipid soluble compound attached with choline bound complex. It results in the formation of lipid complex with better stability and bioavailability [13]

Solvent evaporation Rotary evaporation

Mechanical dispersion method Salting out technique

Characterization technique of phytosomes (18- 19)

1) **Visualisation** - Morphology of phytosomes was observed by digital microscopy transmission microscope and scanning microscope.
   a) **Digital microscopy -** Phytosome formulation shake in water and view under digital microscope at 400Xobjective lens.
   b) **TEM analysis –** The complex was shaken in water and viewed using Transmission Electron Microscope (Hitachi, Japan).
   c) **SEM analysis** - Approximately 5 µL of the phytosomal suspension was transformed to a canopy slip, which successively was mounted on a specimen tab. The samples were allowed to dry at temperature Then the particle size of the formulation was viewed and photographer using Scanning microscope (Sigma scan, Carl Zeiss scan). The particles coated with platinum by using vacuum pressure and thus, the coated samples were viewed and photographed in JEOL JSM - 6701F emission SEM.
2) **Particle size analysis** - Diameter of particles and polydispersity index was noted down by BECKMAN COULTER, DelsaTM Nano. Phytosome formulations were diluted with solvent methanol then evaluated.
3) **FTIR** - Spectral data were taken to work out the structure and chemical stability of extract, PC and phytosome. Spectral scanning was exhausted the range between 4000 and 5000cm.
4) **DSC** - The sample with, phospholipon and phytosome were placed within the aluminum crimp cell and heated at 100C/min from 0 to 4000*C within the atmosphere of nitrogen (TA Instruments, USA, Model DSC Q10 V24.4 Build 116). Peak transit time onset temperatures were recorded by means of an analyzer.

2. Conclusion

Phytosomes are mainly used to novel and advanced drug delievery system mainly they are increase orally, trandermally and topically phytosomes are herbosomes and they are reduce the side effect on the body and reduce toxicity. Phytosomes increases the bio - avalibilty of herbal formulation.

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