



A Review on Solid Lipid Nanoparticles

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ABSTRACT:

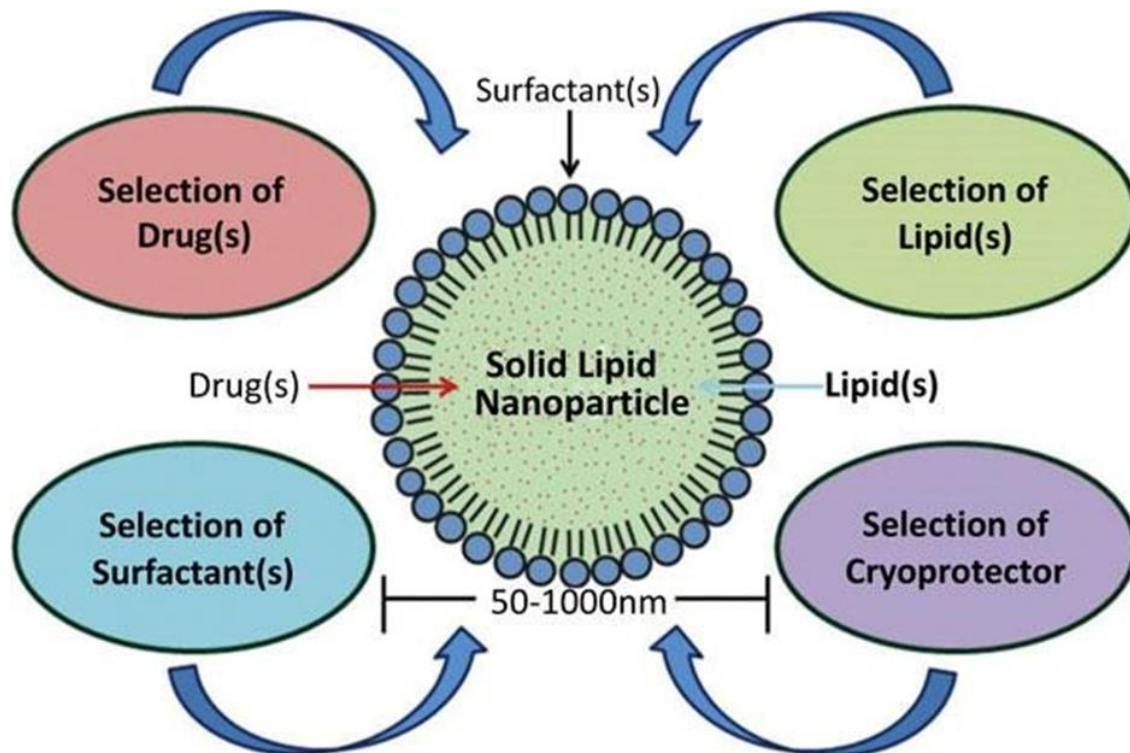
The solid lipid nanoparticle in which the number of probable in drug delivery applications, clinical medicine, cancer therapy, and research. The solid lipid nanoparticle scattering are suggested of an

mixture of transporters system. They are spherical form of solid lipid nanoparticle manometer ranges are different in solid lipid nanoparticles. It is distinctive size dependent. They are having small size of particles and large surface area. The size between 50 to 1000 nanometer of SLN. The SLN processes of core matrix, it also be solubilise the lipophilic molecule, they are alternative career system in that emulsion and liposomes. The diameter size is ranging from 50 nm - 1 um. the solid lipid nanoparticle consists of spherical size of nanometer. The sln lipophilic or hydrophilic drugs.

Keywords: Method of preparation, applications, Advantages, Disadvantages, etc.

Introduction

The solid lipid nanoparticles are tradition to carrier system that colloidal such as emulsion , polymeric microemulsion. It also introduced in 1991. the SLN is a first generation of lipid based on nanoparticle. The SLN have sub Micron in (less than 1000).The grainy drug carriers such as liposomes emulsions are different schematic representation.



Advantages:

Good availability Prolong drug release Good tolerance Enhance stability CNS targeting

Easy to scalp up and sterilize No special solvent required

Improve bioavailability of poor soluble drug

Disadvantages:

Unpredictable gelatin tendency lipid particle growth

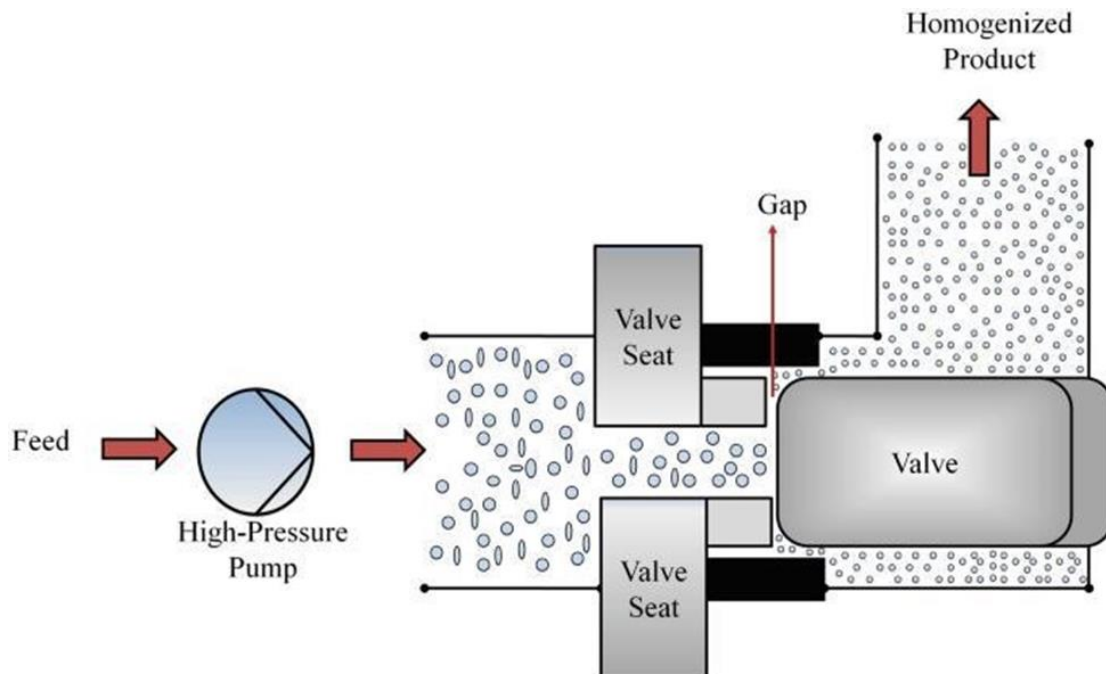
Poor drug loading capacity

Method of preparations:

- High pressure homogenization
- Spray drying method
- Solvent emulsification evaporation technique
- Ultrasonication
- Solvent emulsification diffusion technique
- Microemulsion based method
- Supercritical fluid method
- Double emulsion method
- Precipitation technology
- Film ultrasound dispersion

1) **High Pressure Homogenization:**

The high Pressure Homogenization is the most important technique. it is mechanical technique this technique, are also used in production of SLN. It is used for creating emulsions and cell lysis.

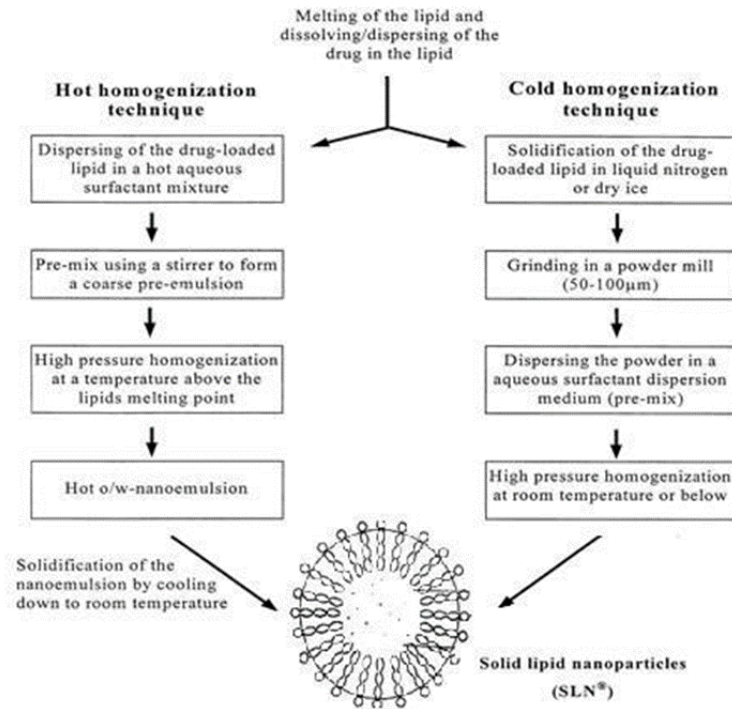


There are 2 main technique of high pressure homogenization. according to following technique:

Hot homogenization Cold homogenization

1) **Hot Homogenization:**

Hot homogenization in this technique also used drug loaded in dispersion of lipid in mixture of hot aqueous surfactant. these are properly mixed it with the help of stirrer, then form of coarse emulsion. it cooling at room temperature and solidification of nanoemulsion.



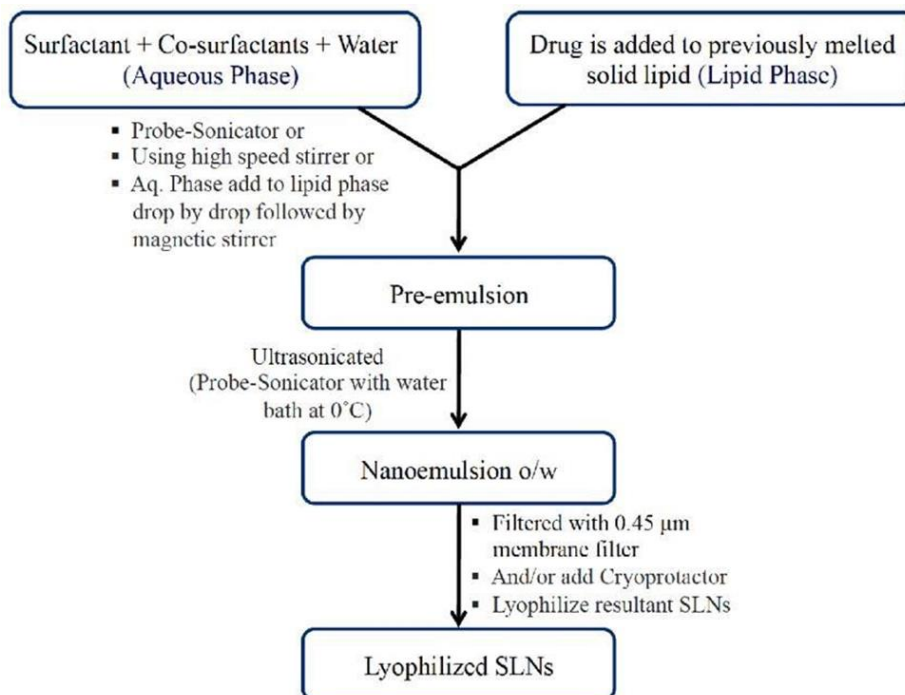
2) Cold Homogenization:

In this technique are suitable for hydrophilic or thermolabile drug. In aqueous surfactant

dispersion medium dispersing in the powder low room temperature in cold homogenization. It formed cold homogenization technique of solid lipid nanoparticles.

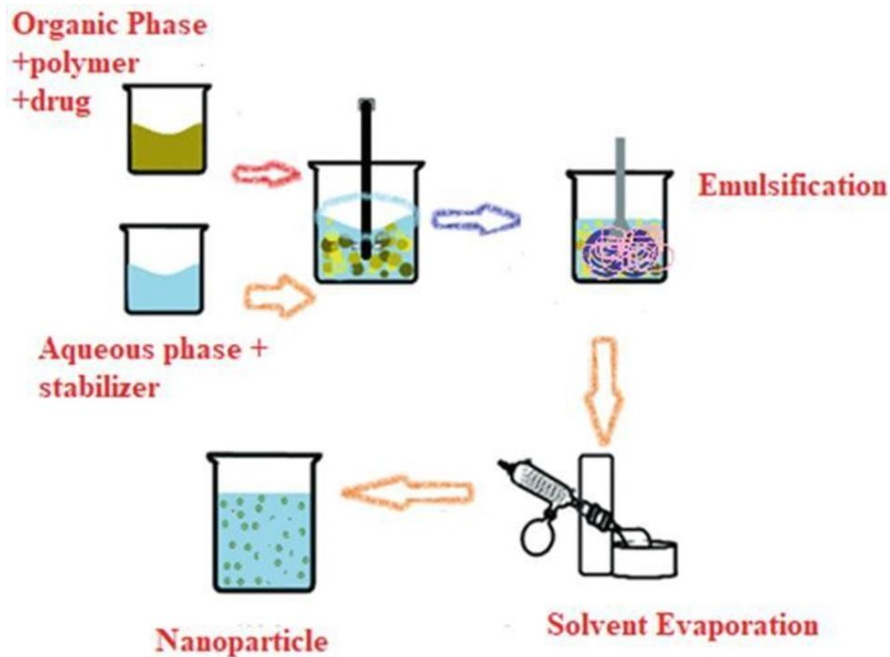
3) Ultrasonication :

Ultrasonication are known as high speed homogenisation. This ultrasonication of frequency about 20 KHZ. they are utilised for homogenization it is based on mechanism of cavitation, it is used for SLN dispersion.



4) Solvent emulsification evaporation technique:

In this technique are used in prepare polymeric nanoparticles. it involves in the hydrophilic and lipophilic drug. these are also dissolve in organic solvent in water immiscible.



Advantages:

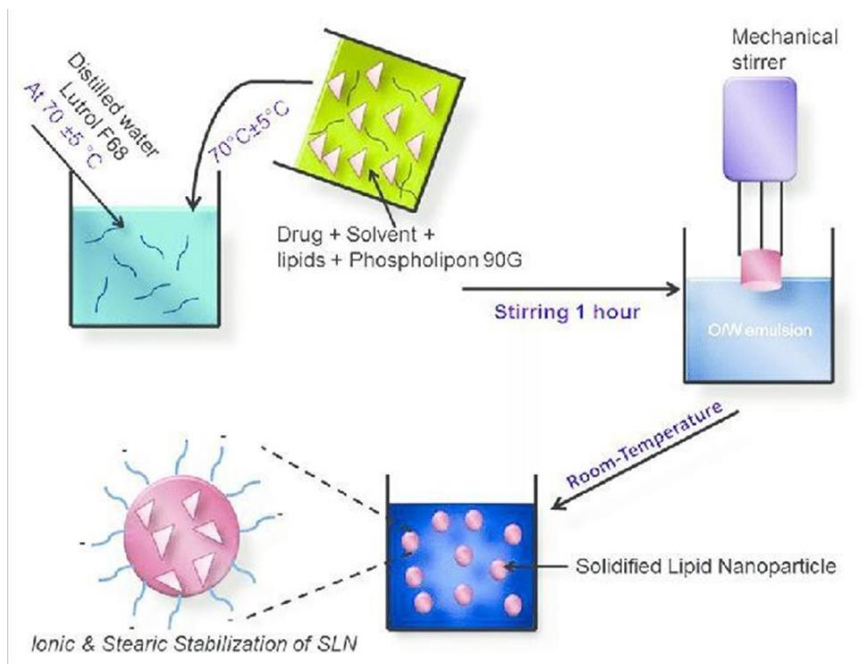
Continuous process
Having mature technology

Disadvantages:

Biomolecule damage
Polydisperse distribution

5) **solvent emulsification diffusion method:**

In this method the very small particles solid lipid nanoparticle used for brain delivery, crossing blood brain barrier etc.



6) **supercritical fluid method:**

supercritical fluid method are comes into the many variations this novel technique and also production of solid lipid nanoparticles. This technique thermophysical property.

Advantages:

avoid use of solvent

gentle pressure and temperature condition

Disadvantages:

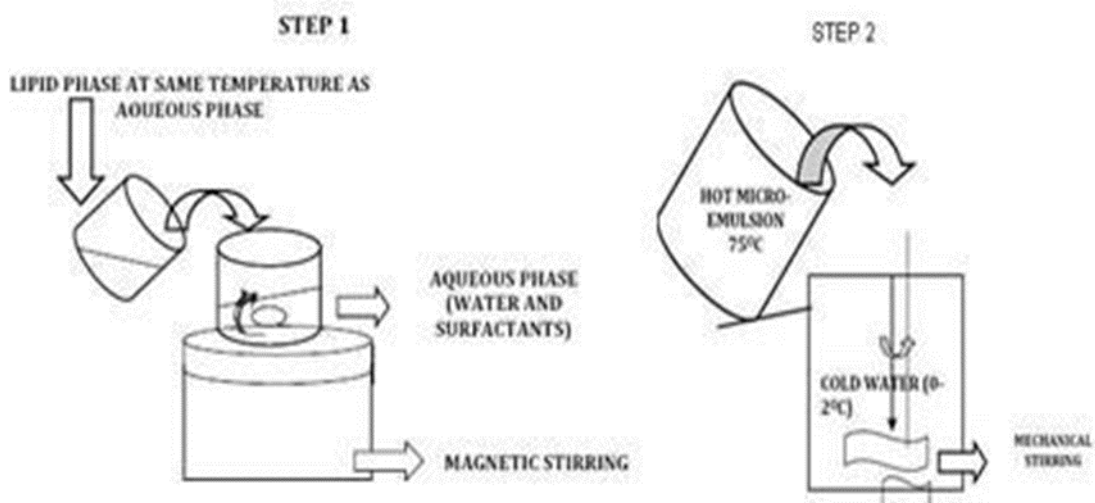
No polar substance are extracted

High power consumption

7) **microemulsion based technique:**

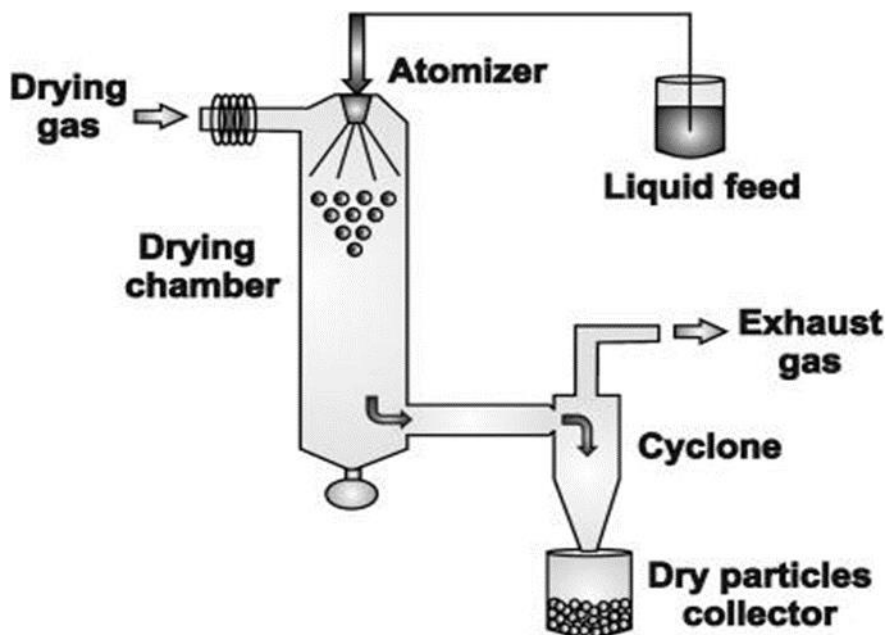
solid lipid nanoparticle are prepared by used in magnetic stirring with dispersing warm microemulsion in Cold water. this is one of the versatile preparation method. this method

are maintained by mechanisms of particle size, control surface area, morphology, geometry etc.



8) **Spray drying method :**

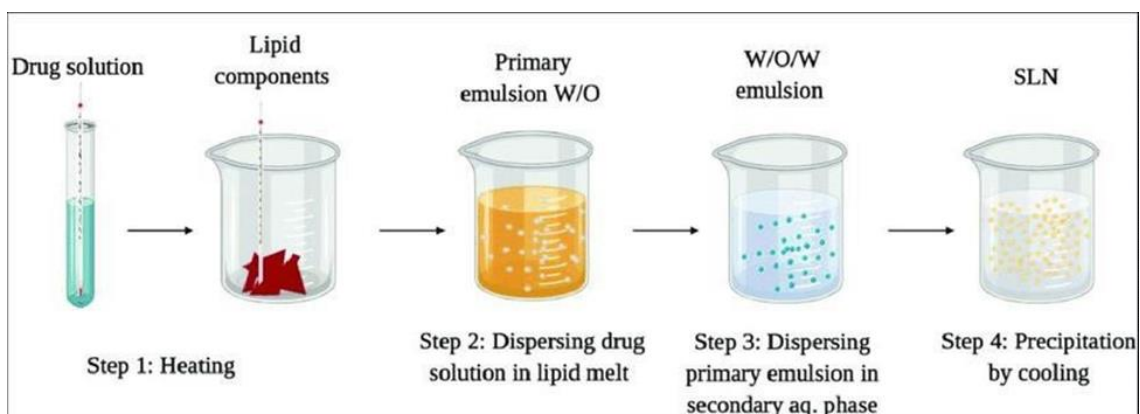
in this method are formed liquid or slurry from dry powder by the progressive drying with help of hot gas. in the method used in many thermally sensitive materials of drying. this material such as food and pharmaceutical materials.



9) Double emulsion method:

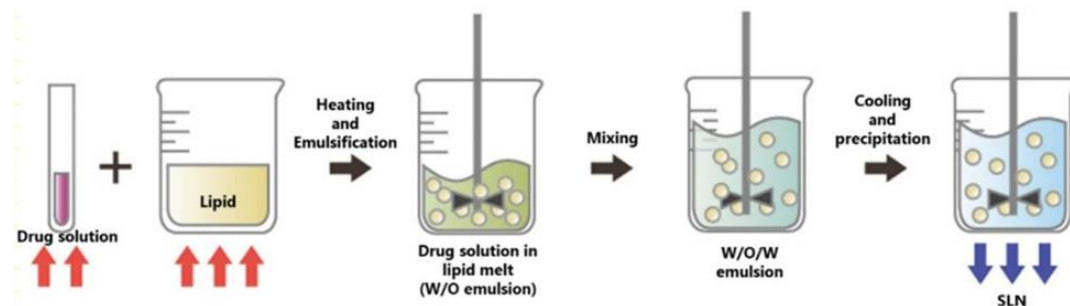
in this method liquid dispersion system are immiscible with each other. O/W/O multiple emulsion system.

This is made possible by double emulsification hence its system are called as double emulsion system. It is thermodynamically unstable.



10) Precipitation method:

they occurred evaporation the organic solid lipid will be precipitated forming nanoparticles. it has its significant has been potential for improving medical therapy precipitation method.



11) Film ultrasound dispersion:

. In these are the evaporation of organic solution. It form by the film of lipid. Later, in emulsion include aqueous solution.

Applications:

- Application as a carrier of the colloidal drug. SLN is a very useful carrier.
- It can be good candidate for iv route.
- it can deliver peptidase and proteins more efficiently.
- The about they can also used for ultrasonic drug.
- The SLN can be used for cosmetic, dermatological and also used in agriculture.
- In natural extract with pesticide properties can be incorporated in SLN and can be used for effective big nano pesticides.
- This nano formulation helps to reduce rapidly evaporation.

Conclusion:

In this review paper are the colloidal drug carrier combines with polymeric nanoparticles. The Nano structure lipid carriers lipid the conjugate etc. they finally. Cannot simply related to Nano emulsion with the solid Core. It has been significant potential for improving medical therapy. In this review article covers the different methods of preparation and its Advantages, Disadvantages, applications etc. in this will be much enquire improvement of safety profile of drug quality of drug using them in the future. In this review article was on elements of Solid lipid nanoparticles and their use in summarisation of different medication.

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