Nano Technology based Topical Semisolid Pharmaceutical dosage Forms

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Abstract

The pharmaceutical semisolid dosages are normally present in the form of paste, creams, gels, ointments. Generally these types of semisolid dosages are used only externally such as skin allergies, injuries, etc. The bases used in the semisolid pharmaceutical dosage are more sensitive to the skin. The topical semisolid medical dosages are spread smoothly on the body surface. It will react with the cells and injuries for long time because it adhered for long time. The main advantages of the semisolid dosage are it does not create side effects. This paper proposes the Nano technology based semisolid dosages which are more effective than conventional semisolids.

Keywords— semisolids, cream, ointments, Nano semisolids.

I. INTRODUCTION

Topical semisolid pharmaceutical dosages are in the form of cream, paste, ointments etc. It consist of drug and non drug ingredients which are spread smoothly on the surface of the skin and adhered on the skin long period as possible and healed the injuries and other problems on the skin. It can be use only for the external of our body and it must support both type of skin. It does not produce any side effects. The main disadvantage of this type of topical semisolid dosage is we cannot measure the accurate dosage. There are different kinds of pharmaceutical ingredients are available they are grinding with oily content to make semisolid like medical dosage. Waxy base is commonly used as a base content to melt the medical contents of the semisolid on the body surface. The most applicable field of this semisolid medical dosage is on dermatology. For preparing the ointments based medical dosage four types of bases are needed they are water soluble bases, adsorption bases, oleaginous bases, water removable bases. Generally oleaginous and adsorption bases are not water soluble some of the example of water insoluble bases are hydrocarbons, hydrophilic petrolatum. The remaining portion of this paper is described about the novel Nano semisolid medical dosage.

II. PROPERTIES OF SEMISOLIDS

The semisolid is the formation of state that is in-between the solid and liquid properties and it is commonly applicable for the field of dermatology. Semisolid dosages are only applicable for external use, it adhered as long as possible and recover the problem occurred area on the skin. The good properties of the semisolid dosages are non-dehydration, elegant in appearance, smooth texture and non-physiological properties of semisolid dosages are miscible with skin, it does not create the irritation on the applied area of the skin, it does not affect the functions of the skin. Generally ointment based semisolid dosages are used in dermatology the bases used for the ointment are follows

- Absorption base
- Oleaginous base
- Water soluble base
- Emulsion base

The most commonly used substances in semisolid dosages are mineral oil and petrolatum which are the mixture of hydrocarbons and the hydrocarbon waxes which are commonly used material in ointments manufacturing because it increase the viscosity of the semisolid. Generally the waxes for manufacturing semisolid dosages are conserved from vegetable oils such as peanut oil, olive oil and almond oil and also conserved from honey comb. There must be a need of more than one emulsifiers to made the semisolid dosages. The chemical formation of semisolid dosages are given below
III. CONVENTIONAL SEMISOLID DOSAGES

Semisolids are available in different forms such as creams, gels, ointments, pastes, etc.

A. Ointments

The ointment based semisolid dosages are mostly used in the field of dermatology. It only applicable for external use, ointment based semisolid dosage are adhered on the skin as long as possible to recover the problem occurred area of the skin. It is made by the combination of fluid and solid based hydrocarbons such as petrolatum and fatty oils. These ointments can apply to the affected area of the skin as two or three times per day.

B. Creams

Creams based semisolids are made up of one or more semisolid agents; it may be water washable or emulsion. The cream based semisolid dosage can be spread and remove easily from the applied area on the skin. It does not create irritation on the applied area of the skin. There is lot of cream based semisolid dosages are available to protect our skin such as moisture cream, sun lotions, baby lotions, mosquito lotions, etc.

C. Gels

Gels are made up of homogeneous mixture of different properties of pharmaceuticals. It is clear and liquid based base in its most of the ingredients which is perfectly mixed with suitable gel based ingredients. There are two types of gel bases are used for making the gel based one is hydrophobic gel and another one is hydrophilic gel.

D. Pastes

Paste based Semisolid dosages are combination of different powder bases which are combined with different semisolid agents and to form the pasty medicine.

IV. INGREDIENTS USED FOR PREPARING SEMISOLID DOSAGES

There are some methods to prepare the semisolid dosages, preparation method are as follows

- Triturating method
- Chemical reaction method
- Emulsification method
- Fusion method

The triturating method is the most commonly used semisolid preparation method, in this method most of the ingredients are oils and fats. The bases used to make the semisolid are mixed well and suitable to get an accurate state of semisolid. In this method the ingredients are melted and other ingredients are added to these melted ingredients periodically to form the paste like state of semisolid dosage. In the emulsification method the oil bases ingredients are supplied to the filters and then filtering the oil contents from the ingredients by supplying these ingredients through several phases. The different phases are then combined at the ratio of 50:50 at 70°C temperature. The mixing of different phases is done simultaneously. The ingredients used for preparing the Nano semisolid are as follows

- Preservatives
- Bases
- Active pharmaceutical agents
- Emulsifier
- Antioxidants
- Buffers
- Gelling agents

V. PREPARATION OF NANO BASED SEMISOLID DOSAGE

To prepare the Nano technology based semisolid dosages the silicon based Nano particles are used. The silicon based Nano particles are effectively work as a vehicle of chemical components in pharmaceuticals. Generally silicon is a gel based material which are commonly used for polishing purpose on different industrial process the properties of silicon are well suitable for preparing Nano sphere semisolid dosages. The medical ingredients are packed as a Nano sphere; these medical ingredients can easily spread inside the cell towards the skin. The adhesive particles and the medical particles can be separate easily while preparing the semisolid pharmaceutical dosage. After preparing the semisolid dosage the semisolid must be tested to confirm whether its state of colloidal and the proportion of other properties are suitably mixed or not.
VI. CONCLUSION

There is lot of semisolid based pharmaceutical dosages are available which are mostly used in the field of dermatology. The semisolid dosages never create the irritation on the applied area of the skin. But the bases used for preparing the semisolid dosages are not water washable so that the kin is spoiled due to more oil content of the dosages. So that this paper proposes the Nano technology based semisolid dosages which are water washable because it separates the bases and medical ingredients of the semisolid. The Nano sphere gel is used for preparing the Nano semisolid pharmaceutical dosages, which are adhered long period as possible so that the injuries can recover quickly and easily.

REFERENCES