**Microemulsions**

Abstract

Microemulsions are one of the best candidates as novel drug delivery system because of their long shelf life, improved drug solubilization with ease of preparation and administration. Microemulsions are thermodynamically stable and optically isotropic liquid solutions of oil, water and amphiphile. They have emerged as novel vehicles for drug delivery which allow controlled or sustained release for ocular, percutaneous, topical, transdermal, and parenteral administration of medicaments. Microemulsions can be easily distinguished from normal emulsions by their low viscosity, transparency and more accurately their thermodynamic stability. Microemulsions have great range of applications and uses such as in pharmaceuticals, agrochemicals, cutting oils, biotechnology, food, cosmetics, analytical applications, environmental detoxification etc. The main objective of this review paper is to discuss microemulsions as drug carrier system with other possible applications.

=============================================================

**Nanosuspensions**

Abstract

Solubility proves to be a major hurdle for the successful development and commercialization of new drug products. Since 40% of the active substances being identified through the new paradigm in high – throughput screening are lipophilic. So, its viability as a potential new drug candidate reduces manifold. Because of this limitation, many pharmacologically active molecules have failed to reach the market. Therefore, Nanosuspensions have emerged as a promising strategy for the efficient delivery of hydrophobic drugs because of their versatile features and unique advantages. Techniques such as media milling and high pressure homogenization have been used commercially for producing nanosuspensions. Recently, the engineering of nanosuspensions employing emulsions and microemulsions as templates has been addressed in the literature. The unique features of nanosuspensions have enabled their use in various dosage forms, including specialized delivery systems such as mucoadhesive hydrogels. Rapid strides have been made in the delivery of nanosuspensions by parenteral, per-oral, ocular and pulmonary routes. Currently, efforts are being directed to extending their applications in site-specific drug delivery. The following work deals with the special features of nanosuspensions, the preparation methods, advantages of such methods, characterization of nanosuspensions, patents, marketed products and their applications for hoping to make easy, the future research in this area.

=============================================================

**Orally disintegrating tablets**

ABSTRACT

Orally disintegrating tablets (ODTs) are solid dosage forms containing drugs that disintegrate in the oral cavity within less than 1 minute leaving an easy-to-swallow residue. The European Pharmacopeia adopted the term orodispersible tablet for a tablet that disperses or disintegrates within <3 minutes in the mouth before swallowing. ODT is a good choice of drug delivery for pediatric and geriatric patients because it troubleshoots the problem of dysphagia. The current article is focused on ideal characteristics, advantages and disadvantages, various technologies developed for ODT, evaluation methods along with recent research and future potential.

Solid dosage forms are popular because of low cost, ease of administration, accurate dosage self-medication, pain avoidance, and the most importantly the patient compliance. The most popular solid dosage forms are being tablets and capsules [1,2]. One important drawback of such dosage forms is Dysphagia, or difficulty in swallowing is common among all age groups. Common complaints about the difficulty in swallowing tablets are size, surface, and taste of tablets. Geriatric and pediatric patients and traveling patients, who may not have ready access to water, are most in need of easy swallowing dosage forms [3]. To fulfill these medical needs, pharmaceutical technologists have developed a novel oral dosage form known as ODTs which disintegrate rapidly in saliva, usually within a matter of seconds, without the need to take it water. Drug dissolution and absorption, as well as onset of clinical effect and drug bioavailability, may be significantly greater than those as compared with conventional dosage forms [4-6]. ODTs releases the medicament in the mouth for absorption through local oromucosal tissue and through pre-gastric (oral cavity, pharynx, and esophagus), gastric (stomach), and post-gastric (small and large intestine) segments of gastrointestinal tract (GIT) [7]. ODTs are also called as orodispersible tablets, quick disintegrating tablets, mouth dissolving tablets, fast disintegrating tablets, fast dissolving tablets, rapid dissolving tablets, porous tablets, and rapidmelts. However, of all the above terms, United States pharmacopoeia (USP) approved these dosage forms as ODTs. The European Pharmacopoeia has used the term orodispersible tablet for tablets that disperses readily within 3 minutes in the mouth before swallowing [3]. United States Food and Drug Administration defined ODT as “A solid dosage form containing a medicinal substance or active ingredient which disintegrates rapidly usually within a matter of seconds when placed upon the tongue.” The disintegration time for ODTs generally ranges from several seconds to about a minute [8].

 Singh et al

40

Jour n al of P harma c e utic a l , Che m ical a n d Biol o gical S c ience s , Febr u ary 20 1 4; 1(1) : 39-51

INTRODUCTION

The formulation and development of novel drug

delivery system with the nature of enhancing the

effectiveness of existing of drug is an ongoing

process in pharmaceutical research. Since there

are many types of drug delivery systems that have

been developed. The microemulsion concept was

introduced in 1940s by Hoar and Schulman who

generated a clear single-phase solution by

triturating a milky emulsion with hexanol [1]. They

prepared the first microemulsion by dispersing oil

in an aqueous surfactants solution and adding an

alcohol as a co-surfactant, leading to transparent

stable formulation. Microemulsion is defined as

microemulsion are clear, transparent,

thermodynamically stable dispersions of oil and

water, stabilized by an interfacial film of surfactant

frequently in combination with a co-surfactant

[2].Alternative names for these systems are often

used, such as swollen micelle,

transparentemulsion, solubilized oil and micellar

solution. Microemulsions are bicontinuous

systems that are essentially composed of bulk

phases of water and oil separated by a

surfactant/cosurfactant rich interfacial region [3].

These systems have advantages over conventional

emulsions in that they are thermodynamically

stable liquid systems and are spontaneously

formed [4]. Microemulsions are currently the

subject of many investigations because of their

wide range of potential and actual utilizations. The

high capacity of microemulsions for drugs makes

them attractive formulations for pharmaceuticals.

These systems also offer several benefits for oral

administration, including increased absorption,

improved clinical potency and decreased toxicity

 Singh et al

40

Jour n al of P harma c e utic a l , Che m ical a n d Biol o gical S c ience s , Febr u ary 20 1 4; 1(1) : 39-51

INTRODUCTION

The formulation and development of novel drug

delivery system with the nature of enhancing the

effectiveness of existing of drug is an ongoing

process in pharmaceutical research. Since there

are many types of drug delivery systems that have

been developed. The microemulsion concept was

introduced in 1940s by Hoar and Schulman who

generated a clear single-phase solution by

triturating a milky emulsion with hexanol [1]. They

prepared the first microemulsion by dispersing oil

in an aqueous surfactants solution and adding an

alcohol as a co-surfactant, leading to transparent

stable formulation. Microemulsion is defined as

microemulsion are clear, transparent,

thermodynamically stable dispersions of oil and

water, stabilized by an interfacial film of surfactant

frequently in combination with a co-surfactant

[2].Alternative names for these systems are often

used, such as swollen micelle,

transparentemulsion, solubilized oil and micellar

solution. Microemulsions are bicontinuous

systems that are essentially composed of bulk

phases of water and oil separated by a

surfactant/cosurfactant rich interfacial region [3].

These systems have advantages over conventional

emulsions in that they are thermodynamically

stable liquid systems and are spontaneously

formed [4]. Microemulsions are currently the

subject of many investigations because of their

wide range of potential and actual utilizations. The

high capacity of microemulsions for drugs makes

them attractive formulations for pharmaceuticals.

These systems also offer several benefits for oral

administration, including increased absorption,

improved clinical potency and decreased toxicity

 Singh et al

40

Jour n al of P harma c e utic a l , Che m ical a n d Biol o gical S c ience s , Febr u ary 20 1 4; 1(1) : 39-51

INTRODUCTION

The formulation and development of novel drug

delivery system with the nature of enhancing the

effectiveness of existing of drug is an ongoing

process in pharmaceutical research. Since there

are many types of drug delivery systems that have

been developed. The microemulsion concept was

introduced in 1940s by Hoar and Schulman who

generated a clear single-phase solution by

triturating a milky emulsion with hexanol [1]. They

prepared the first microemulsion by dispersing oil

in an aqueous surfactants solution and adding an

alcohol as a co-surfactant, leading to transparent

stable formulation. Microemulsion is defined as

microemulsion are clear, transparent,

thermodynamically stable dispersions of oil and

water, stabilized by an interfacial film of surfactant

frequently in combination with a co-surfactant

[2].Alternative names for these systems are often

used, such as swollen micelle,

transparentemulsion, solubilized oil and micellar

solution. Microemulsions are bicontinuous

systems that are essentially composed of bulk

phases of water and oil separated by a

surfactant/cosurfactant rich interfacial region [3].

These systems have advantages over conventional

emulsions in that they are thermodynamically

stable liquid systems and are spontaneously

formed [4]. Microemulsions are currently the

subject of many investigations because of their

wide range of potential and actual utilizations. The

high capacity of microemulsions for drugs makes

them attractive formulations for pharmaceuticals.

These systems also offer several benefits for oral

administration, including increased absorption,

improved clinical potency and decreased toxicity