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REVIEW ON CAP –IN-CAP TECHNOLOGY – A RECENT INNOVATION

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ABSTRACT

In this article, the study of never technology of capsule in solid dosage form among all in pharmaceutical dosage forms. This review includes newer trends related to capsule shell, capsule fill material, capsule sealing technique and different capsule systems to achieve modified drug release, encapsulation of various kind of materials and for modified application like mapping of the drug for clinical evaluation Either this done by capsule shell or by dosage filling in capsule dosage forms. This article mostly focuses on advancement of capsule in capsule technology. In this the study is about to reduce the frequency of dosing or to increase effectiveness of the drug by localization at the site of action, reducing the dose required, or providing uniform drug delivery. Capsugel: capsule filling liquid capsule technology offers a proven ability of new line extensions and is suitable for nutraceutical and pharmaceutical applications. The capsule capsule technology represents an advance of our first liquid filled the hard capsule technology.

Key words: Cap in cap technology, Capsugel, Capsule, Hard gelatin capsule, Duocap.

INTRODUCTION

The word capsule originated from the diminutive of the Latin word "*capsa*" that means "box", a capsule is basically "a little box" and may refer to any encompassing structure or tiny container. The capsules are a solid dosage form of the drug, wherein the medicament must be enclosed in a hard or soft, soluble container or shell of gelatin. It is further defined as dosage forms within which one or more drug or inert substances are locked inside a small gelatin shell. Most are designed to be swallowed whole, but sometimes the content may also be removed from the shell of gelatin and used in the form of powder pre-measured medicinal products. They can be divided in main two categories, hard capsule (two pieces) and soft capsule (one piece) according to the presence of glycerol or another plasticizer which make it soft and elastic [1].

Capsule in Capsule formulation which is also known as DuoCap is a single, oral-dosage unit that comprises a capsule-in-a-capsule and offers broad therapeutic applications. Output profiles for multiple dosing unit that provides internal and external capsules contain the same active drug.

For example, an immediate release formulation from the outer capsule and a controlled-release formulation from the inner capsule. In addition to modifying the release profiles it is also possible to target the inner and outer capsule to different areas of the GI tract (small intestine or colon), with the appropriate coating such as enteric coating [2-4].

Alternatively, the capsules may contain different active substances for use with combined therapies or goods which are incompatible in a single capsule. The combination therapies are currently of considerable interest shown by the recent launches of Combodart TM (GlaxoSmithKline) and VimovoT (Pozen / AstraZeneca).

The internal capsule can contain a liquid, semi - solid, powder or granular formulations and the external capsule contains liquid formulations or semi solid. combination of drugs are not as common in the industry, as you might think. This may be due to stability issues among active. The advent of capsule in capsule technology allows both API to keep completely separate. Therefore, it is likely that combinations of drugs may become more common in the pharmaceutical industry.

Fewer new drugs are discovered and developed, and current medications seem to have the spotlight in terms of being re-formulated or new indications or prolong their

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lives because of expiring patents. Capsule in capsule formulation consists of two phases

A) Immediate releasing phases

B) Sustained releasing phases.

Approach to the creation of formulas with different functions and is suitable for filling:

- In vitro specific output requirements (bimodal or active) ;
- Preventing the degradation of a specific site in the gastrointestinal tract ;
- Improved patient compliance ;
- Multi-component materials compatibility issues
- Marketing line extensions needed

Capsule-in-capsule technology offers broad formulation and design options, including:

- an inner capsule that can contain a liquid, semi-solid, powder, or pellets;
- an outer capsule that can contain a liquid or semi-solid formulation; and
- coating of capsule shells to achieve enteric protection or colonic drug delivery [5].

It can be used to achieve:

- Immediate-, controlled-, delayed- or pulsatile-release profiles; and
- Bioavailability enhancement and/or stability improvement through the use of self-emulsifying systems (SEDDS).

Drug Candidates for Duo Cap

- Drugs which are having Poor bioavailability i.e. Digoxin
- Drugs which are having Low melting point i.e. Ibuprofen and Vitamins
- Drugs which are having Low dose /High potency.
- Drugs which are having Content uniformity.
- Drugs which are having Critical stability i.e. the antibiotic Vancomycin hydrochloride
- Drugs which are having Sustained release. i.e. Gelucire
- Drugs which are having Short half-life. i.e. penicillin G
- Drugs which are having Short long life. i.e. Diazepam.
- Drugs which requires large doses i.e. Sulphonamides.
- Drugs which are having extensive plasma protein binding [6].

Drug used for Duo Cap

- Digoxin
- Ibuprofen
- Vancomycin
- Gelucire
- Penicillin G
- Diazepam
- Sulphonamides
- Phenytoin
- Furosemide

Suitable Excipients Carriers for Innercap Dosage

The following are some of the excipients which are most widely used for the formulation of Innercap dosage form:

- Arachis Oil
- Castor Oil
- Coconut Oil
- Soya Oil
- Vitamin E
- Vegetable Oil
- Cottonseed Oil
- Corn Oil
- Olive Oil
- MCT's
- Palm Oil
- Lipids

Capsugel

Capsule filling liquid capsule technology offers a proven ability of new line extensions and is suitable for nutraceutical and pharmaceutical applications. The capsule capsule technology represents an advance of our first liquid filled the hard capsule technology [7].

The capsule in capsules technology involves specialized techniques of filling liquid with the aid of custom fill devices designed that allows a pre-filled, a smaller capsule to be inserted into a capsule filled with more liquid. The smallest internal capsule may contain a liquid, a solid, or a semi-solid formulation and, depending on the requirements of formulation or product, or two capsules may be gelatin or hydroxyl propyl methylcellulose (HPMC) and coated as appropriate [8].

CONCLUSION

Capsule in Capsule formulation is a single, oral-dosage unit that comprises a capsule-in-a-capsule and offers broad therapeutic applications. In this immediate release formulation from the outer capsule and a controlled-release formulation from the inner capsule. The internal capsule can contain a liquid, semi - solid, powder or granular formulations and the external capsule contains liquid formulations or semi solid combination of drugs

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CONFLICT OF INTEREST

No interest.

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