Abstract

The present pharmaceutical companies are spending more to get the attention of the people and to overcome the competition. So day to day new pharmaceutical dosage forms are introducing to overcome the problems in the administration, taste, odor and solubility etc. One such type of pharmaceutical dosage form is capsule. Capsule are defined as solid pharmaceutical dosage form that contains medicinal agent within either a hard or soft soluble container or shell, usually used for the oral administration or be used as suppositories. The shells are made of a suitable form of gelatin or other substance. In these review types of capsules, sizes of capsules, machines and advantages and disadvantages are reviewed.

Keywords: Gelatin, liquid filled hard capsules, flavored capsules, vegetarian capsules.

Introduction

Capsules have been viewed by consumers as the most efficient method of taking medication. For this reason, producers of drugs such as OTC analgesics wanting to emphasize the strength of their product developed the "caplet" or "capsule-shaped tablet" in order to tie this positive association to more efficiently-produced tablet pills. After the 1982 Tylenol tampering murders, capsules experienced a minor fall in popularity as tablets were seen as more resistant to tampering. In 1834, Mothes and Dublanc were granted a patent for a method to produce a single-piece gelatin capsule that was sealed with a drop of gelatin solution. They used individual iron moulds for their
process, filling the capsules individually with a medicine dropper. Later on, methods were developed that used
sets of plates with pockets to form the capsules. Although some companies still use this method, the equipment is
not produced commercially any more. Capsules are one of the leading dosage forms. Countless capsules are
dispensed to patients every day. Perhaps you have taken some capsules during the past year. If you have, you are
already aware of some of the advantages and disadvantages of this dosage form. Capsule are defined as solid
pharmaceutical dosage form that contains medicinal agent within either a hard or soft soluble container or shell,
usually used for the oral administration or be used as suppositories. The shells are made of a suitable form of
gelatin or other substance. Now a day’s many drugs which are not suitable to formulate in tablet form are given
in the form of capsules as they mask the taste and odor. Capsules based upon the size, nature and flavor they are of
many varieties.

Types

The two main types of capsules are based upon the nature are:

Hard-shelled capsules, which are normally used for dry, powdered ingredients or miniature pellets and contains
cap and body.

Soft-shelled capsules, primarily used for oils and for active ingredients that are dissolved or suspended in oil.

Three types of capsules based upon the drugs to be filled are.

1. Gelatin capsules

Capsules made up of gelatin are perfect to fill any type of powders or any supplement like vitamins, herbs or other
medications. For gelatin made capsules different flavors and colors (same or different colors for cap and body of
the capsule). Both hard and soft capsules are made from aqueous solutions of gelling agents like:

Animal protein mainly gelatin; Plant polysaccharides or their derivatives like carrageenans and modified forms of
starch and cellulose.

Other ingredients can be added to the gelling agent solution like plasticizers such as glycerin and/or sorbitol to
decrease the capsule's hardness, coloring agents, preservatives, disintegrants, lubricants were also added.
Do not fill capsules with any liquid suspension because it will dissolve prior to consumption

Keep out of direct sunlight, hot water and high temperatures

Doses depend on the powder and medication that the capsule is filled with and as needed

Some of the examples are

Clear Gelatin Capsules

Colored Gelatin Capsules -Red/White

Grape Flavored Gelatin Capsules -Purple/Purple

Mint Flavored Gelatin Capsules -Green/Green

Coffee Flavored Capsules -Brown/Brown

Strawberry Flavored Gelatin Capsules -Red/Red

Orange Flavored Gelatin Capsules -Orange/Orange

Bubblegum Flavored Capsules -Pink/Pink

Berry Flavored Gelatin Capsules -Dark Purple

Clear Fish Gelatin Capsules

2. Vegetarian capsules

An entirely new colored capsule manufactured with the state of the art technology and made from a vegetable derived source. 100% vegetarian derived from HPMC (Hidroxy, Propyl, Methyl, Cellulose), a widely used excipient in pharmaceuticals, food and cosmetics. Well suited for various cultural, religious and vegetarian dietary requirements. Vegetable capsules are composed of hyromellose, a polymer formulated from cellulose.

Do not fill capsules with any liquid suspension because it will dissolve prior to consumption

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Doses depend on the powder and medication that the capsule is filled with and as needed

Some of the examples are

Clear Vegetarian Capsules
Colored Vegetarian Capsules

K-Caps Vegetarian Capsules

3. Flavored capsules

Flavors with its traditional gelatin capsules to create a product which delivers enormous marketability and superior odor masking ability for powdered ingredient. Flavors like Strawberry, Orange, Lime, Grape, Berry, Coffee, Mint, Bubblegum, Bacon, Beef, Chicken flavors are used.

Some of the examples are

CATcaps Beef Flavored

CATcaps Chicken Flavored

DOGcapsBacon Flavored

L-Caps Lime Flavored Capsules

Lime Flavored Capsules Light Green/Light Green

Orange Flavored Gelatin Capsules Size 1 Orange/Orange

Strawberry Flavored Gelatin Capsules Size 1 Red/Red

STANDARD SIZES OF CAPSULES

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<td>0.7</td>
<td>23.1</td>
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Equipment

**Soft gelatin Capsules**

Auto soft gelatin encapsulation machine used to produce Round, Oval, Oblong, Tube, Twist-off, Special shapes and Suppositories. Automatic Soft Gelatine Encapsulation Machine is used for manufacturing soft capsules.

**Hard Capsule Machine**

SFR 901 FS6/7 In this model of capsule making machine, dipping action, transfer along upper deck, transfer from upper to lower deck and transfer from lower deck to table are all performed by high precision programmable servo motors combined with precision ball screws

SFR 901D In this model of capsule making machine, dipping action, separately for cap and body, is performed by high precision programmable servo motors combined with precision ball screws

SFR 720 This model of capsule making machine follows the traditional system of capsule production where all movements and actions are performed by highly accurate mechanical components

**Capsule filling machine**

Semi-Automatic SL90 Capsule Filling Machine

Semi-Automatic SL 15 Capsule Filler Machine

Semi-Automatic SL 60 Capsule Filler Machine

Semi-Automatic SL 180 Capsule Filler Machine

**Liquid-Filled Hard Capsules**

Combines the advantages of a liquid form absorption with the effortless delivery of a solid capsule. It is a new formulation developed for lipids, suspensions or micro-emulsions, and liquid solutions to catch them in the hard gelatin capsule.
Benefits

- Immediate Release
- Minimized gastric irritation
- Odor and flavor masking
- Aids oral absorption of lipophilic components
- Bioavailability optimization
- Effective dosage system
- Longer shelf life
- Less excipients, less adverse effects and greater tolerability
- Supports NCE highly lipophilic developments (less soluble in water)
- Superior bioavailability of active principle (therapeutic efficacy)

Examples drugs which are filled in liquid filled hard capsules

- Vitamine E 100 UI
- Vitamine E 200 UI
- Vitamine E 400 UI
- Lecitine 550 mg
- Fish Liver Oil
- Coenzyme Q10 x 50 mg
- Fish Oil 1200 mg
- Standardized Garlic Oil 1%

Advantages of Capsules: ¹³

Capsules have advantages over other dosage forms. Some of these advantages are:

- Capsules are a professional looking, uniform, clean, and elegant dosage form.
- Capsules effectively mask the odor and taste of substances.
• Capsules provide accurate dosage

• Capsules provide a rapid release of medication in the stomach because of their rapid disintegration.

**Disadvantages:**

The drawbacks of capsules are

• They cost considerably more than tablets.

• They have significant space and potency limitations since their powdered contents cannot be compressed to a significant degree.

• Since capsules are not air-tight, their shelf-life is shorter than tablets.

• They are not suited to liquid or oil-based nutrients either unless special, expensive encapsulation techniques and products are used.

• Brittle Construction

• Allergies in Children

**Storing**

Gelatin capsules become brittle when they are stored at low humidity and they become soft, sticky, or liquid at high humidity. Consequently, empty gelatin capsules, as well as filled ones should be stored in a cool, dry place in tight containers.

**Dispensing**

Capsules should be dispensed in glass or plastic containers that protect them from moisture and dust. Capsules that are adversely affected by the atmosphere should be in a tightly closed container and the patient should be instructed to keep the bottle tightly closed except when withdrawing a dose.

**References:**


5. http://www.tpub.com/content/armymedical/MD0809/MD08090108.htm


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