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Brief Introduction on Capsules as a Dosage Form

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ABSTRACT: Capsules are solid preparations in which drug substance(s) and/or excipients are enclosed in either a soft or hard soluble shell. The shell is normally made from gelatin or other suitable polymeric material and results in a simple, tasteless, odorless, elegant, easy-to-swallow dosage form without the need for a secondary coating step. Depending on the composition of the capsule shell, capsules may be classified as either hard or soft capsule, with soft capsules possessing a flexible, plasticized gelatin film while the hard capsule is composed of two pieces in the form of cylinders closed at one end; the shorter piece, called the 'cap' and the longer piece, called the 'body'.

KEYWORDS: Drug, capsules, dosage form, soft and hard shell, gelatin.

I. INTRODUCTION

A drug is any substance that causes a change in an organism's physiology or psychology when consumed. Drugs are typically distinguished from food and substances that provide nutritional support. Consumption of drugs can be via inhalation, injection, smoking, ingestion, absorption via a patch on the skin, or dissolution under the tongue [1]. Drugs are rarely administered as pure chemical substances alone and are almost always given as formulated preparations or medicines.

Dosage forms:

Dosage forms are pharmaceutical drug products in the form in which they are marketed for use, with a specific mixture of active ingredients and inactive components (excipients), in a particular configuration (such as a capsule shell, for example), and apportioned into a particular dose. The term dosage form can also sometimes refer only to the pharmaceutical formulation of a drug product's constituent drug substance(s) and any blends involved, without considering matters beyond (like how it is ultimately configured as a consumable product such as a capsule, patch, etc.).

Capsules:

Capsules are defined as unit solid dosage form of medicaments available as small containers (shells) made up of gelatin enclosing accurately measured drug substances. The term capsule is derived from the Latin word *capsula*, meaning a small container. Capsule occupies a significant position in the drug development. They are often believed as the primary oral dosage form because of their manufacturing process compared to other dosage forms. Gelatin has the property of disintegrating when it comes in contact with water, thereby releasing the medicament completely. Instead, of gelatin, denatured gelatin, methyl cellulose and polyvinyl alcohol can also be used to make the capsule shells [2]. There are mainly two types of capsules which are: Hard-shelled capsules, which contain dry, powdered ingredients or miniature pellets made by e.g. processes of extrusion or spheronization. These are made in two halves: a smaller-diameter "body" that is filled and then sealed using a larger-diameter "cap". Soft-shelled capsules are primarily used for oils and for active ingredients that are dissolved or suspended in oil [3]. They are a single-unit solid dosage form, consisting of a liquid or semi-solid fill enveloped by a one-piece hermetically sealed elastic outer shell. They are formed, filled and sealed in one continuous operation, preferably by the rotary die process.

Gelatin:

Gelatin is by far the most common and most well-known material used to produce hard capsule shells. It is a generic term for a mixture of purified protein fractions obtained from irreversible hydrolytic extraction of collagen obtained from the skin, white connective tissue, and bones of animals. Both of these classes of capsules are made from aqueous solutions of gelling agents, such as animal protein (mainly **gelatin**) or plant polysaccharides or their derivatives (such as carrageenans and modified forms of starch and cellulose). Other ingredients can be added to the gelling agent solution including plasticizers such as glycerin or sorbitol to decrease the capsule's hardness, coloring agents, preservatives, disintegrants, lubricants and surface treatment etc [4].



Fig. 1. Hard gelatin capsules



Fig.2. soft gelatin capsules [5]

II. CONCLUSION

From the above premises, capsules are solid preparations in which drug substance(s) and/or excipients are enclosed in either a soft or hard soluble shell. The shell is normally made from gelatin or other suitable polymeric material and results in a simple, tasteless, odorless, elegant, easy-to-swallow dosage form without the need for a secondary coating step.

Depending on the composition of the capsule shell, capsules may be classified as either hard or soft capsule, with soft capsules possessing a flexible, plasticized gelatin film. The shells may be composed of two pieces in the form of cylinders closed at one end; the shorter piece, called the 'cap' and the longer piece, called the 'body', or they may be



composed of a single piece. The two-piece capsules and one-piece capsules are commonly referred to as hard-shell capsules and soft-shell capsules respectively.

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