

**Formulation and evaluation of aspirin, paracetamol and serratiopeptidase tablet conventional dosage form an overview**Rajesh Asija<sup>1\*</sup>, Suryabhan Singh Ratore<sup>1</sup>, Shyam Sunder<sup>1</sup>, Prem Chand Dhaker,<sup>1</sup> Nitin Nama<sup>1</sup>

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**ABSTRACT**

The present studies are based on the single nsaid drug dosage form or on the combination of nsaid along with analgesic. Some drug combination also provides pain relief with proteolytic enzyme that prevents the GI bleeding and increase the anti-inflammatory action. When a drug combination which contain anti inflammatory, mild analgesic, antipyretic and proteolytic properties then this combination create multi action so that this can be very useful in different types of disease condition and reduce its adverse effect. At the therapeutic dose the dosages form give better and parallel action similar to unimodal approach. The unimodal approach cannot be address the multimodal mechanism of the disease state so to address the multi modal mechanism of the disease a unimodal approach is not sufficient so the multimodal drug combination acts on different site and treat the disease.

**Key words:** Aspirin paracetamol serratiopeptidase tablet dosage form.

**1. INTRODUCTION:**

Drug delivery refers to approach, formulations, technology, also system for transporting a pharmaceutical compound in the body as needed to safely complete its desired therapeutic effects. It may keep technical site-target within the body, or it might grip facilitate systemic pharmacokinetics; in any case, it is usually concerned with both quantity and period of drugs attendance. Drug release is frequently approach by a drug's chemical formulation, but it may also occupy medical devices or drug-device combination products. Drug delivery is a concept greatly included with dosage form and route of administration, the latter sometimes even being consider part of the definition. Drug delivery technologies change drug release report, absorption, distribution and elimination for the benefit of improving product efficiency and wellbeing, as well as patient convenience and fulfillment. Drug release is as of: diffusion, ruin, bump, and similarity based mechanisms. Most common routes of administration contain the preferred non-invasive peroral (through the mouth), topical (skin), transmucosal (nasal, buccal/sublingual, vaginal, ocular and rectal) and inhalation routes. Many medication such as peptide or protein and antibody, injection and gene base drug, in general may not be deliver using these routes because they might be at risk to enzymatic degradation or cannot be absorbed into the systemic circulation efficiently due to molecular size and

blame issues to be therapeutically effective. For this cause many protein and peptide drugs have to be deliver by injection or a nano needle selection. For instance, many immunizations be base on the delivery of protein drugs and are often done by injection.

present efforts in the area of drug delivery include the growth of targeted delivery in which the drug is only active in the target area of the body and sustaine released formulations in which the drug is released over a phase of time in a controlled manner from a formulation. In order to reach efficient targeted delivery, the designed system must keep away from the host's defense mechanisms and flow to its projected place of act. type of sustained released formulation comprise liposome, drugs load environmental microsphere or drug polymer conjugates.

Tablet is defined as a compressed solid dosage form containing medicaments with or with no Excipient. By the Indian Pharmacopoeia. Pharmaceutical tablet be hard, flat and biconvex dishes, dosage form, equipped by compressing a drugs or a mixture of drugs, with or without diluents. They differ in shape and vary greatly in size and weight, depending on quantity of medicinal substances and the proposed mode of administration. It is the most fashionable dosage form and 70% of the total medicines are dispensing in the form of Tablet. All medicaments are presented in the Tablet form except where it is hard to formulate or administer. Solid

medicaments may be administered orally as powder, pill, cachet, capsule or tablet. That dosage forms include a amount of drug which is known as a single unit and they are known collectively as solid unit dosage forms, still in the case of sustained action arrangements which, technically, contain the the same of several normal doses of drug. The stringent formulation necessities of current medicament, many advantage of tablets and capsules medications, attached with expanding health services and the promise need for large-scale economic manufacture, have lead to a steady decline in the prescribe of powders and pills. Tablets and capsules, on the extra hand, currently account for well over two third of the total number and cost of medicines formed all over the world.

#### 1.1 Advantage:

1. They are unit dosage form and present the greatest capability of all oral dosage form for the maximum dose precision and the least content changeability.
2. Cost is the lowly of all oral dosage form.
3. Lighter and compressed.
4. Easy to package and strip.
5. Easy to swallowing with least affinity for hang-up.
6. Sustained release product is achievable by enteric coating.
7. offensive odour and bitter taste can be covered by coating technique.
8. Suitable for large scale production.
9. Greatest chemical and microbial stability.
10. Product identification is easy and rapid requiring no additional steps when employing an pressed and/or monogrammed punch face.

#### 1.2 Disadvantages:

1. Difficult to swallow of children and unconscious patients.
2. Some drugs oppose compression into dense compacts, due to amorphous nature, low density character.
3. Drugs with poor wetting, slow dissolutions propertie, best absorption lofty in GIT may be hard to create.
4. Bitter testing drugs, drugs with an objectionable odor or drugs that are sensitive to oxygen may require encapsulation or coating.

#### 1.3 Properties of Tablet:

1. A tablet should have graceful product identity as free of defect as chips, crack, discolor, and contaminations.
2. Should have sufficient strength to withstand.
3. Should have the chemical and physical stability.
4. The tablet must be able to release the medicinal agents in a predictable and reproducible manner.
5. Must have a chemical stability.

#### 1.4 Types of Tablets:

##### 1.4.1. Tablets ingested orally:

- Compressed tablet
- Multiple compressed tablet
- Repeat action tablet
- Delayed release tablet
- Sugar coated tablet
- Film coated tablet.
- Chewable tablet

##### 1.4.2. Tablets used in oral cavity:

- Buccal tablet
- Sublingual tablet
- Troches or lozenges
- Dental cone

##### 1.4.3. Tablets administered by other route:

- Implantation tablet
- Vaginal tablet

##### 1.4.4. Tablets used to prepare solution:

- Effervescent tablet
- Dispensing tablet
- Hypodermic tablet
- Tablet triturates

#### 1.5 Techniques of Granulation:

**Granulation** is the work or process of forming or crystallizing into grains. Granules characteristically have a size range between 0.2 to 4.0 mm depending on their successive use. Synonym "Agglomeration" Agglomeration process or in a extra general term particle size improvement technologies are great tools to change product properties. Agglomeration of powders is usually used to improve physical properties as wettability or flowability and bulk density or product form.

##### 1.5.1. Direct Compression:

##### 1.5.2. Dry Granulation:

##### 1.5.3. Wet Granulation:

##### 1.5.2. Dry granulation:

The dry granulation process is used to form granules without using a liquid solution because the product granulated may be responsive to moisture and heat. Forming granules without moisture require compacting and identifying the powder. this process main powder particle are aggregated in high pressure. Sweyng granulator or high cut off mixer-granulator can be used for the dry granulation. Dry granulation can be conduct under two processes; also a large tablet (slug) is produced in a deep obligation tableting press or the powder is squeeze between two counter-rotating rollers to produce a nonstop sheet or ribbon of materials referred to as a chilsonator. When a tablet press is used for dry granulation, the powders may not possess sufficient natural flow to supply the product uniformly into die cavity, resultant in unstable degrees of

densifications. The roller compactor (granulator-compactor) uses an auger-feed system that will without fail deliver powder uniformly between two force roller. The powder is compact into a ribbon and small pellets among these rollers and milled through a low-shear mill. When the product is compacted correctly, then it can be passed through a mill and ultimate blend before tablet compression.

### 1.5.3. Wet granulation:

In wet granulation, granules are shaped by the accumulation of a granulation liquid onto a powder bed which is under the influence of an impeller (in a High shave granulator, screws (in a identical screw granulator) or air (in a fluidized bed granulator). The demonstration resulting in the system along with the wetting of the apparatus within the formulation results in the aggregation of the major powder particles to produce wet granules. The granulation liquid (fluid) contain a solvent which must be volatile so that it can be distant by drying, and be non-toxic. usual liquids include water, ethanol and isopropanol also alone or in combination. The liquid solution can be also aqueous based or solvent base. Aqueous solution has the benefit of creature safer to deal with than solvents. Water mixed into the powders can form bond between powder particle that are tough adequate to lock them jointly. though, once the water dries, the powders may fall distant. Therefore, water may not be tough adequate to create and hold a bond.

In such instance, a liquid solution that includes a binder (pharmaceutical paste) is required. Povidone, which is a polyvinyl pyrrolidone (PVP), is one of the most commonly used pharmaceutical binders. PVP are dissolving in the water and solvent or added to the process. When PVP and a solvent or water is mixed with powder, PVP form a link with the powder through the process, and the solvent or water evaporates. Once the solvent and water has been dried and the powders have shaped a more tightly detained mass, then the granulation is crushed. This procedure results in the arrangement of granule. The process can be very simple or very complex depending on the characteristics of the powder, final object of tablet creation, and the apparatus that is obtainable. In the usual wet granulation method the wet mass is forced through a sieve to make wet granules which are then dried.

### 1.6 Tablet Compression Machine:

Tablets are finished by compressing a formulation containing a drug or drugs with excipients on stamping machine called press. Tablet press are designed with following basic components:

1. Hopper (for holding and feeding granulation).

2. Dies (that define the size and shape of the tablet).
3. Punches (for compressing the granulation within the dies).
4. Cam tracks (for guiding the movement of the punches).
5. A feeding mechanism (for moving granulation from hopper into the dies).

### 1.7 Evaluation of Tablet:

#### 1.7.1 General Appearance:

The general appearance of a tablet, its identity and general elegance is necessary for consumer acceptance, for control of lot-to-lot consistency and tablet-to-tablet consistency. The controls of general appearance involve the capacity of size, shape, color, attendance or nonattendance of smell, taste.

#### 1.7.2. Size & Shape:

It can be dimensionally describe & controller. The thickness of a tablet is only variables. Tablet thickness can be calculated by micrometer or by other device. Tablet thickness should be controlled with In a  $\pm 5\%$  variation of standard value.

#### 1.7.3. Unique identification marking:

These marking use some form of embossing, engraving or printing. These markings contain company name and symbol, manufactured goods policy, product name.

#### 1.7.4. Organoleptic properties:

Color distribution must be uniform by no mottling. For visual color relationship. balance the color of sample against standard color.

#### 1.7.5. Hardness and Friability:

Tablet require a sure amount of potency or stiffness and resistance to friability to with stand mechanical shake of handling in makeup, covering and transport. Hardness usually measures the tablet crush strength.

#### 1.7.6. Friability:

Friability of a tablet can determine in laboratory Roche friabilator. It has a plastic chamber that revolves at 25 rpm, dropping the tablets from side to side a space of 6 inches in the friabilator, which is then work for hundred revolutions. The tablets are reweighed. Compress tablet that lose less than 0.5 to 1.0% of the Tablet weigh are consider acceptable.

#### 1.7.7. Weight Variation test:

(U.S.P.) Take 20 tablets and weighed individually. Determine average weight and compare the different tablets. Weight to the common. The tablet goes by the U.S.P. test. if no more than 2 tablet are outer. the percentage limit and if not able to differ by more than 2 times the percentage limit.

#### 1.7.8. Content Uniformity Test:

Randomly select 30 tablets. 10 of these assay alone. The Tablet passes the test. if nine of the ten tablet must

contain not less than 85% and not more than 115% of the labeled drug content and the 10 tablets may not contain less than 75% and more than 125% of the labeled content. If these conditions are not met, remaining 20 tablets assayed individually and none may fall outside of the 85 to 115% range.

#### 1.7.9. Disintegration Test:

(U.S.P.) The U.S.P. machine to test disintegration uses 6 glass tubes that are 3 inch long, open at the top and 10 mesh screen at the base end. To test for disintegration time, 1 tablet is positioned in every tube and the basket rack is situated in a 1-Litre beaker of water, virtual gastric fluid or simulated intestinal fluid at  $37 \pm 20$  C such that the tablet stay 2.5 cm. under the surface of liquid on their growing movement and not closer than 2.5 cm from the base of the beaker in their descending movement. Move the basket containing the tablets up and down through a distance of 5-6 cm at a frequency of 28 to 32 cycle per minute. Floating of the tablet can be prohibited by placing perforated plastic discs every tablet. According to the test the tablet should disintegrate and every one particle should pass through the 10 mesh screen in the time specific. If any residue leftovers, it should have a flexible mass. Disintegration time uncoated tablets 5-30 minute and for coated tablet 1-2 hours

#### 1.7.10. Dissolution Test:

(U.S.P.) Two set of Apparatus-1, A single tablet is placed in a small wire mesh basket attached to the bottom of the shaft connected to a changeable speed motor. The basket is immerse in a dissolution medium (as specified in monograph) contain in a 100 ml. flask. The flask is cylindrical with a hemispherical base. The flask is maintained at  $37 \pm 0.50$  C by a constant temperature bath. The motor is adjusted to turn at the specified speed and sample of the liquid are withdrawn at intervals to determine the amount of drug in solutions

#### CONCLUSION:

As per the discussion this can be find that at the different disease state multi functional combination drug dosage form may be very useful for the treatment of the different disease state. So the combinational drug therapy is very useful when the patient have more than one disease that also reduce the cost of therapy and pill load and increase patient compliance and reduce GI side effect.

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