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AN OVER REVIEW OF EFFERVESCENT TABLET OF INDOMETHACIN

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ABSTRACT

Effervescent tablets, categorized as tablets designed for dissolution in water prior to administration, present a range of benefits in drug delivery. Effervescent tablets find application in diverse therapeutic areas, delivering faster onset, favourable gastric tolerance, and enhanced portability. A widely effervescent technique is used to make pills, which are necessary for medication delivery control. The new application of the effervescent tablet is reflected in this review.

KEYWORDS: Effervescent tablets, medications, carbon dioxide, faster onset, gastric tolerance.

INTRODUCTION

"Effervescent tablets are tablets that meant to be dissolved or dispersed in water before administration" is defined by the FDA and as amended. In addition to the active ingredient, it usually contains a mixture of acids / hydrochloric acids (citric, tartaric, malic or other suitable acids or acid anhydrides), carbonates and bicarbonates (sodium, potassium or other suitable alkali metal carbonates or bicarbonates). Carbon dioxide is released when mixed with water. Effervescent tablets are becoming increasingly popular in a variety of sectors including supplements and pharmaceutical use due to the ease in which they can be consumed. Effervescent tablets are

designed to break in contact with liquid such as water or juice, often causing the tablet to dissolve into a solution.

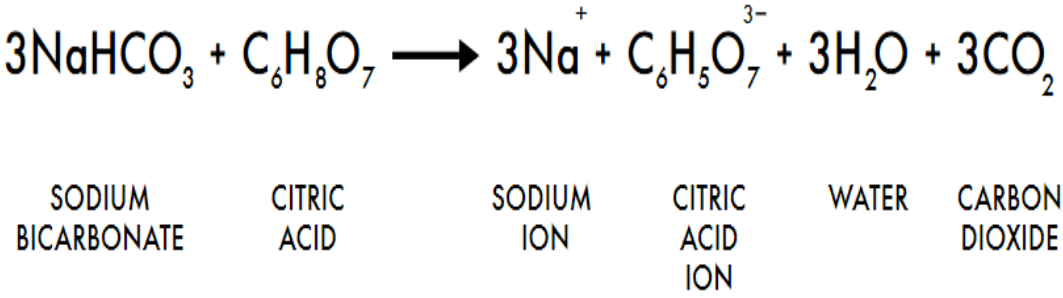

Figure 1.

FAST ON SITE OF ACTION

The primary benefit of effervescent tablets is that the medication is already in solution when they are taken. As a result, absorption occurs earlier and is more thorough than with a regular pill. A quicker beginning of effect results from earlier absorption. The pH of the effervescent medication is just right for absorption when it is delivered to the stomach. Many drugs. It can be absorbed slowly through the stomach or be impeded by food or another medication.

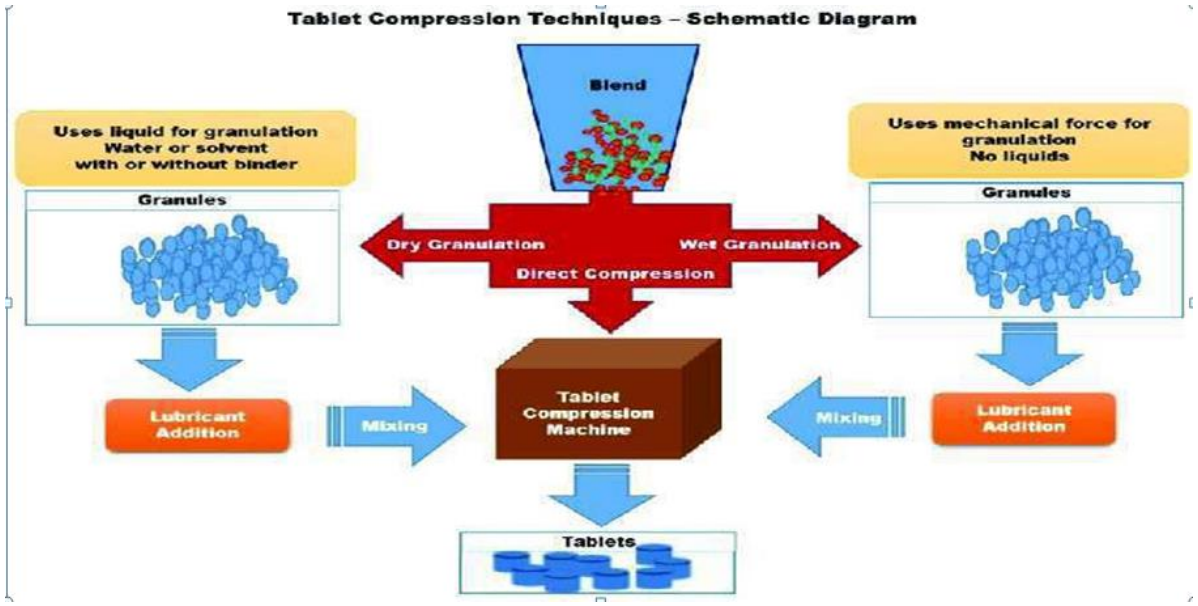

Figure 2: Tablet Compression Techniques.

FUNDAMENTALS OF EFFERVESCENTS

Effervescence consists of a soluble organic acid and an alkali metal carbonate salt, one of which is often the API. Carbon dioxide is formed if this mixture comes into contact with water. Typical examples of the acids and alkalis used include:

- Citric acid
- Tartaric acid
- Malic acid
- Fumaric acid
- Adipic acid
- Sodium bicarbonate
- Sodium carbonate
- Sodium sesquicarbonate
- Potassium bicarbonate
- Potassium carbonate.

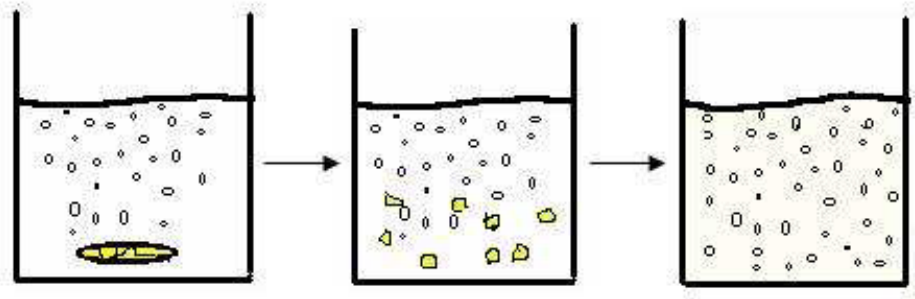

Figure 3: Mechanism of Effervescence.

ADVANTAGES

- ❖ Permits mechanical handling of powders without loss of mix quality.
- ❖ Improves the flow of powders by increasing particle size and sphericity.
- ❖ Increases and improves the uniformity of powder density.
- ❖ No need to swallow tablet.
- ❖ Good stomach and intestinal tolerance.
- ❖ More portability.

DIS ADVANTAGES

- Unpleasant taste of some active ingredients.
- Larger tablets requiring special packaging materials.
- Relatively expensive to produce due to large amount of more or less expensive excipients and special production facilities.
- Clear solution is preferred for administration, although a fine dispersion is now universally acceptable.

PREPARATIONS OF EFFERVESCENT TABLET OF INDOMETHACIN

- **Wet granulation**

Despite serious drawbacks, wet granulation remains the most widely used technique for effervescent granulation. This procedure yields homogeneous compressible granules and tablets with consistent quality, measured in either weight or amount of active ingredient.

- **Fluidised bed granulation**

The fluid bed granulation-drying method is used to granulate the ingredients for effervescent mixing in a single step. Using a heated air stream and a dry mixture of acid and carbonate sources, this method produces a fluid bed. The most popular granule fluid, water, reacts momentarily before vanishing when injected in tiny amounts. When the last bit of water is injected and Hot, dry air is used to finish the drying process, and the reaction is complete. An alternative approach to effervescent granules pellets is a rotor fluidized bed spray granulator. This technology reduces interaction between the effervescent system's two parts. Making effervescent pellets requires a continuous two- or three-step process. Granulating the alkaline ingredients in a revolving fluidized bed is the first step. The acid powder is sprayed onto the basic spheres using the granulation solution in the following step. Consequently, the spheres develop an outer acid layer that is isolated removed by a neutral layer from the binder. Following agglomeration, drying takes place.

- **Dry granulation**

A wet granulation process that breaks down the substance is what causes the effervescent reaction. Consequently, alternative solutions were created. Using a roller or other direct compression methods, dry granulation slugging is one of these methods for compressing big tablets or slugs. These work best as substitutes for the wet granulation method**.**

- **Direct compression**

In the production of Direct compression has been successfully used as an alternative to dry granulation for effervescent tablets containing acetylsalicylic acid. In this procedure, it is helpful to solve operational stability and process efficiency issues. This technology's practical applications are limited because it can only be utilized in the best production environments. This is because complex combinations of raw materials that are compressible, free flowing, and non-dissolving are required.

FORMULATIONS OF EFFEVERSCENT TABLET OF INDOMETHACIN

An effervescent tablet formulation combines a solid acid like citric acid, a base like sodium bicarbonate. Active Pharmaceutical ingredient API, and other excipients sweeteners, flavors, binders, water soluble lubricants that release carbon dioxide upon contact with water, creating, a fizzy, fast dissolving solution for quicker drug absorption. Key components include acid base pairs, API, and water-soluble binders PVP, lubricants PEG, sodium benzoate, sweeteners aspartame, and flavors, all compressed into a tablet.

EVALUATION TEST OF EFFERVESCENT TABLETS

• **Weight variations:** Twenty effervescent tablets are chosen at random and weighed one at a time. We compute the average weight and standard deviation for each of the twenty effervescent tablets.

• **Thickness:** Twenty effervescent tablets are chosen at random from a tray, the thickness of the effervescent tablet is measured using a sliding scale, and the total thickness of the crown is measured.

• **Hardness:** The resistance of tablets to shipping or breakage under conditions of storage, transportation and handling before usage depends on its hardness. The hardness of tablet of each formulation was measured by Monsanto Hardness Tester. The hardness was measured in items of kg/cm2. Hardness or tablet crushing strength is the force required to break a tablet in a diametric compression. The force is measured in kg and the hardness of about 3-5 kg/cm2 is considered to be satisfactory for uncoated tablets.

Figure 4: Hardness Tester.

• **Friability:** Weighing twenty effervescent tablets, they are put inside a Roche fribilator. With each revolution, the effervescent tablet descends six inches as it spins at 25 rpm. The effervescent pills are reweighed after being dusted.

Figure 5: Friabilator.

- **Disintegration time:** When the effervescent When a tablet is added to 200 ml of water in a beaker that is heated to 150 250°C, many gas bubbles start to form. when there is no longer any particle agglomeration and the effervescent tablet in the water stops producing gas. The examination is redone. using five more effervescent tablets.
- **Solution pH:** The pH utilizing a digital pH meter in a solution with a constant temperature and water volume. The effervescent tablet needs to be dissolved in 200 ml of hot water heated to a certain temperature between 150°C and 250°C. Following the receipt of the effervescent tablet, the pH is determined as completely dissolved.
- **Drug content:** Willpower the Effervescent Tablet is dissolved in 200 milliliters of water to ascertain the drug content. To find out how much medicine is in the tablet, use a UV Spectrophotometer to measure the drug content absorbance of this solution.
- **In-vitro drug release study:** A variety of equipment and the proper dissolving liquid were used to conduct in-vitro release investigations. The dissolving medium's temperature was kept at 37 ± 0.5°C. The duration of the release study is 3.30 hours. At a predetermined period, the aliquot of the dissolving medium is taken out and filtered. After that, absorbance is calculated.
- **Measurement of CO2 content:** After dissolving one effervescent tablet in 100 milliliters of 1N sulfuric acid solution, weight changes are calculated. The amount of CO2 (mg) in each tablet is indicated by the weight difference that was achieved. The determinations are averaged.
- **Evaluation of the water content:** Ten of the formulation's tablets are dried for four hours in a desiccator that contains activated silica gel. A water content of 0.5% or less is considered acceptable.

CONCLUSION

- There are three ways to make effervescent tablets: dry, wet, and compression. The wet approach is the most popular for creating effervescent granules.
- The hardness, friability, weight fluctuation, and disintegration time of these formulations were assessed. In addition to making administration easier, effervescent tablets also cover up the taste of some components, eliminating the need for flavouring compounds.
- The use of effervescent pills may lessen issues like gastrointestinal compatibility that arise with ordinary tablets.
- effervescent tablets act quickly, the individual using them will feel better. Carbon tablets, often known as effervescent tablets, are made to dissolve in water and release carbon dioxide.
- It is made by compressing powdered components into a thick mass and then covering it with a blister pack or a packet of gasoline with a desiccant inside the cap.
- They are used by combining them with water to create a solution.
- Additionally, powder materials might be granulated and sold as effervescent granules or packed and marketed as effervescent powders. Before the tablets are manufactured, the powdered materials are frequently first granulated.

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