



PHARMSOL NEWS

EFFERVESCENT TABLETS; PRACTICAL AND CONVENIENT DELIVERY SYSTEM FOR DRUG ADMINISTRATION

MAY 2022 EDITION

PSNL/003/05/2022



Oral dosage forms are the most popular way of taking medication, despite having some limitations compared with other dosage forms like slow absorption of the Active substance. Tablet is the most common and popular solid dosage form of drugs. About 80- 90% of the total prescriptions contain various tablet dosage forms like film coated, Orodispersible tablets, buccal tablets, soluble tablets, Effervescent tablets.

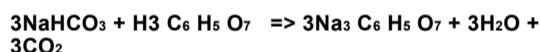
Effervescent tablets have proved its utility as an oral delivery system in the pharmaceutical and dietary industries for decades. The uniqueness of effervescent tablets is that they set up a rapid onset of action due to fast disintegration followed by dissolution. Effervescent tablets in presence of water presents drug in solution, which is more palatable than any other conventional solid dosage form due to the release of carbon dioxide in the form of effervescence.

Advantages of Effervescent tablets:

- Pleasant taste / Taste masking of bitter actives
- Uniformly distributed and Increase liquid intake once into solution
- Less irritation and greater stomach & Intestinal tolerance
- High patient compliance & Improved therapeutic effect
- Faster onset of action & swallowing not required
- Superior Stability
- Presentable fizzy tablet which also leads to Physiological advantage to the patient

Fundamentals of effervescent:

Effervescent consist 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



This above reaction occurs in presence of water, even with small amount as catalysing agent, which increases the rate of reaction. As water act as a catalysing agent for the reaction, all the moisture sensitive products or effervescent products are normally stored in controlled humidity condition

Components of Formulation:

The effervescent formulation mainly consists of three components- Active ingredient, Acid source (citric acid, tartaric acid etc.) and Alkaline compound, constituted by a sodium or potassium carbonate or bicarbonate. Other components like binders, water soluble lubricants, glidant, disintegrants, surfactants, sweeteners, flavours etc., are also used based on the manufacturing process.

Manufacturing process:

Effervescent tablets can be manufactured by Direct mixing, Wet granulation technique (One step granulation both acidic and alkaline components are mixed together) or two step granulations (Acidic and alkaline components are granulated separately and mixed in the final step), dry granulation, hot melt granulation etc.

Manufacturing of effervescent formulation requires careful control of environmental factors to prevent premature effervescent reaction, compression issues like sticking/picking. Recommended environmental conditions for effervescent tablets include below 25° C temperature and 25 – 30 % Relative Humidity as the raw materials used for preparation of effervescent formulation are hygroscopic in nature and reacts by absorbing moisture from the manufacturing area.

Packaging

Effervescent tablets are highly hygroscopic in nature. The selected packaging material should prevent the moisture absorption from the environment. Mostly Aluminum foil packets and tubes along with desiccants are used for packing. Packaging is one of the key aspects, which is critical in maintaining the integrity and stability of the product throughout its shelf life.

Quality control

Apart from routine test carried out for solid dosage forms, Carbon dioxide content, Disintegration/Effervescence time, solution of pH, Equilibrium moisture content are additional test to be performed on finished dosage form.

Drugs that are formulated as effervescent tablets

- Drugs difficult to digest or disruptive to the stomach like Calcium carbonate, Aspirin, Ranitidine HCl etc.,
- pH-sensitive drugs like amino acids and antibiotics
- Drugs requiring an oversized dose like paracetamol etc.,
- Drugs that are susceptible to light, oxygen, or moisture like vitamins

Conclusion

Effervescent technology provides a novel dosage form for nutritional supplements and pharmaceuticals. The ability to incorporate large dosages of a wide variety of active ingredients in an easy-to-swallow liquid, plus increased absorption of the active ingredient, offers advantages over conventional tablets.

The manufacturing process involves some critical steps that need to be addressed carefully during formulation and factory design.



How PharmSol can help you?
Are you looking for Development and tech transfer of Effervescent formulations?



Get in touch with our experts info@pharm-sol.com

DO NOT REPLY TO THIS E-MAIL! If you have any questions, please write to info@pharm-sol.com

If you do not wish to receive any further Newsletter from us, please write to info@pharm-sol.com

Past issues of "PharmSol Newsletters" can be found in www.pharm-sol.com