“DESIGN, DEVELOPMENT AND CHARACTERIZATION OF ORODISPERSIBLE TABLETS OF ANTI-EMETICS”

1. INTRODUCTION

Oral drug delivery has been known for decades as the most widely utilized route of administration among all the routes that have been explored for the systemic delivery of drugs via various pharmaceutical products of different dosage forms. The reasons that the oral route achieved such popularity may be in part attributed to its ease of administration as well as the traditional belief that by oral administration the drug is as well absorbed as the food stuffs that are ingested daily. In fact, the development of a Pharmaceutical product for oral delivery, irrespective of its physical form involves varying extents of optimization of dosage form characteristics within the inherent constraints of gastrointestinal (GI) physiology. All the Pharmaceutical products formulated for systemic delivery via the systemic delivery via the oral route of administration, irrespective of the mode of delivery (immediate, sustained, or controlled release) and the design of dosage form (either solid, dispersion, or liquid), must be developed within the intrinsic characteristics of GI physiology. Therefore, a fundamental understanding of various disciplines, including GI physiology, pharmacokinetics, pharmacodynamics and formulation design are essential to achieve a systemic approach to the successful development of an oral pharmaceutical dosage form. The more sophisticated a delivery system, the greater is the complexity of Physicochemical, pharmacokinetic and pharmacodynamic characteristics of the drug.

The anatomic and physiologic characteristics of the GIT, and Physicochemical characteristics and the drug delivery mode of the dosage form to be designed. Oral route of drug administration have wide acceptance up to 50-60% of total dosage forms. Solid dosage forms are popular because of ease of administration, accurate dosage, self-medication, pain avoidance and most importantly the patient compliance. The most popular solid dosage forms are being tablets and capsules; one important drawback of these dosage forms for some patients however is the difficulty to swallow. Drinking water plays imp role in the swallowing of oral dosage forms, often times people experience inconvenience in swallowing conventional dosage form, such as tabs when water is not available in the motion sickness (kinetosis) and sudden episodes of coughing during the common cold allergic condition and Bronchitis. Because FDT’s dissolve or disintegrate in the patient's mouth, the drug will be partially dissolved in close proximity to the taste buds. After swallowing, there should be minimal or no residue in the mouth A pleasant taste
inside the mouth becomes critical for patient acceptance, unless the drug is tasteless or does not have an undesirable taste, masking technique should be used. An ideal taste masking technology should provide drugs without grittiness and with good mouth feel. The amount of taste masking drug should be kept low to avoid excessive increase in tablet weight and size. Taste masking of bitter tasty drug is critical to the success of FDT formulation. Also in case of elderly, stroke victims, bed ridden, patients affected by renal failure and patients who refuse to swallow such as Pediatrics, Geriatrics, and Psychiatric patients. Moreover orodispersible tabs, because of its rapid absorption there is possibility of an improved Bioavailability and faster onset of action.

It is estimated that there are about 10,000 taste buds on the tongue, roof of the mouth, cheeks, and throat, each bud has 60-100 receptor cells. These receptor cells interact with molecules dissolved in the saliva and produce a positive or negative taste sensation. Many drugs are unpalatable and untreatable in their natural state. Physiological and physiochemical approaches have been used to prevent drugs from interacting with taste buds, and thus to eliminate or reduce negative sensory response.

To overcome these difficulties. Pharmaceutical research is following in developing a technology i.e. orodispersible tablets, which can be swallowed without aid of water and also to improve palatability, bioavailability, maximum therapeutic benefits for safe and effective management of diseases.

From the pharmaceutical industry's point of view, taste masked orodispersible tablets can provide new dosage forms a life cycle management tool for drugs near to the end of their patent life. The tablets disintegrate inside the mouth, drugs may be absorbed in the buccal, pharyngeal and gastric regions, thus rapid drug therapy intervention and increased bioavailability of drugs is possible. The pregastric drug absorption avoids the first pass metabolism; the drug dose can be reduced if a significant amount of the drug is lost through the hepatic metabolism.

The significance of proposed research work is to explore the possibility of obtaining good mouth dispersibility and feel with taste masking of tablets, so that it will be helpful for the large pool of the patients. Orodispersible taste masking tablets constitute the innovative dosage form which overcome the problem of swallowing and provide a quick onset of action. The pediatric & geriatric populations are the primary targets as both groups found it difficult to swallow conventional tablets.

Future of orodispersible technology lies in the development of orodispersible tablets with controlled release properties. If one orodispersible tablet can deliver drugs with short half lives for 12-24 hrs, it would be quantum improvement in orodispersible tablet technology.
Despite advances in the orodispersible technology formulation of hydrophobic drugs is still challenge, especially when the amount of drug is high. As the dose increases the formulation sacrifices its fast disintegrating property.