

Annotated bibliography: fast dissolving tablets research



3. LITERATURE REVIEW

- M. Geetha et al.(2015)had prepared fast dissolving tablet of anti-asthmatic drug terbutaline sulphate using direct compression method. Study was related to compare natural super disintegrating agent plantago ovate husk powder with synthetic superdisintegrant crospovidone. They concluded that natural super disintegrant showed better disintegration, dissolution, fast onset of action and it is also cheap easily available, non-toxic. Accelerated stability study was also performed which also showed positive results. [13]
- Muhammad Talha Usmani et al.(2015)had prepared orally disintegrating tablet of Montelukast sodium by two different formulations using cost effective direct compression method. They have used cherry flavor and aspartame as sweetener. Formulations were evaluated for its performances and obtained better formulation which were subjected for further study by central composite design. [14]
- Balagani Pavan Kumar et al (2015)had prepared Nizatidine dissolving tablet. Taste masking is done by eudragit E100 using solid dispersion method and tablets were prepared by spray drying and solvent evaporation technique. Tablets were prepared using crospovidone, soy polysaccharide in three different concentrations and evaluate for disintegration time, drug release and taste masking. [15]
- Vivek Dave et al(2015)had prepared rapidly dissolving tablets and which give quick onset of action to overcome poor patient compliance associated with conventional tablets tablets were evaluated for

disintegration time, wetting time, dissolution rate and taste masking.

Hence, it lead to improve bioavailability of drug and efficacy. [16]

- Pradip Solanki et al(2015)had prepared mouth dissolving tablet to treat schizophrenia with clozapine as active agent. Solubility was tested in all complexes of cyclodextrin from which HP β -CD showed maximum solubility. Trial batches were carried out for Screening of diluents and superdisintegrant. 3^2 factorial design was used to optimize formulation. The optimize formulation is evaluated for its disintegrstion rate, drug content, drug release, wetting time. [17]
- Bhavani et al (2015)had prepared rapidly disintegrating tablet to improve patient compliance who have difficulty to swallow the tablets and hard gelatin capsules. MDTs have enhanced safety and improve patient compliance. Mouth dissolving tablet are beneficial for many patients like psychics, geriatric, paediatric, unconscious and bed-ridden patients who have difficulty for swallowing tablets and capsules. [18]
- Nagar Praveen Kumar et al. (2014)had prepared fast dissolving tablet of piroxicam using three different superdisintegrants. They had prepared 9 batches of natural super disintegrant that is guar gum, isapghula and fenugreek by changing 3 concentrations. For preparation of tablets they used direct compression method. The powder blend and final tablets were evaluated for flow property and release optimization. Accordinhg to their results F4 batch is optimized and that have shown 99. 18% of drug release. [19]
- Anisree. G. S et al. (2014)had developed Levocetirizine hydrochloride mouth dissolving tablet. Drug and excipients were mixed and tablets

were formulated using direct compression method. Drug-excipient study was carried out by IR spectra. They had concluded that the formulation having MCC and crospovidone have optimum drug release. [20]

- Pratibha et al. (2014) had prepared fast disintegrating tablet by using Metoclopramide hydrochloride as active agent to overcome swallowing problems. Prepared tablets by direct compression method. Compatibility were done by FTIR and DSC. Selection and Optimization of superdisintegrant was also done by evaluation of prepared tablets. [21]
- Taksande JB et al (2014) had developed fast dissolving tablet of non-steroidal anti-inflammatory Drug Lornoxicam with synthetic and natural superdisintegrant using direct compression method. Banana powder and soy polysaccharide were used as natural superdisintegrant and crospovidone was used as synthetic super disintegrant. They have concluded that natural superdisintegrants showed more disintegration as compared to synthetic agents and can be used instead of Synthetic materials. [22]
- Deepak Sharma et al (2014) had prepared Cetirizine Hydrochloride fast disintegrating tablet. They have used different binders and disintegrants and their different concentrations in present study. They have optimized sodium starch glycolate as super disintegrant. Direct compression is used for tablet preparation. The optimized formulation is evaluated for drug release, compatibility study, accelerated stability

study and concluded that the prepared formulation have quick onset of action and increases patient compliance. [23]

- Geetha lakshmi et al. (2014) had prepared fast dissolving tablets using different superdisintegrants and its different concentration. Interaction is checked by FTIR spectroscopy. The tablets were prepared and evaluated. From the prepared 9 batches they have optimized F6 as best formulation which disintegrated in 12 sec and released drug in 6 min up to 99.46%. [24]
- Alpana P. Kulkarni et al (2014) had prepared orally disintegrating tablet of Rizatriptan benzoate and also masked its taste. Taste masking of drug was carried out by mass extrusion with eudragit EPO and aminoalkylmethacrylate copolymer with different ratio. The formulation was optimized based on drug polymer interaction and bitterness score. Taste maskin was checke by in vitro release of drug in salivary fluid. [25]
- Lovleen Kaur et al (2014) had prepared Aceclofenac fast dissolving tablets by direct compression method. *Lepidium sativum* mucilage was selected as natural superdisintegrant and Different concentrations were also used. A 3^2 factorial design was applied to optimize the formulation. Nine batches (D1–D9) were formulated accordingly. Two independent variables were selected and their effect on three dependent variables were studied. [26]
- Rajeshree. et al (2012) had prepared Lisinopril fast dissolving tablets using natural superdisintegrants by direct compression method. Aloe

Vera and mucilage of *Hibiscus rosasinensis* were used as natural

superdisintegrants. Compatibility was studied by FTIR spectroscopy between the drug and excipients. The formulation was evaluated for in vitro drug release. Formulation containing Hibiscus rosasinensis was found to be optimized formulation which contain disintegration in 0. 26 sec. [2]

- Murthy. et al (2012) had developed Lisinopril fast dissolving tablets using super disintegrants in different concentration by direct compression method. Superdisintegrants such as croscarmellose, crospovidone, sodium starch glycolate were used. All formulations contain various proportion of drug and excipients from them crospovidone showed better drug release then other formulations. [3]
- Patel. *et al* (2011) had formulated nimesulide fast dissolving tablet using natural superdisintegrant lepidium sativum which is widely used as herbal medicine. Mucilage was added as disintegrating agent. They have concluded that mucilage had reduced the disintegration time. The formulation also contain mannitol to increase solubility of mucilage . [4]
- Saini. et al (2011) had developed mouth dissolving tablet of anti-allergic drug Levocetirizine dihydrochloride. Tablets were prepared by using cost effective direct compression method and crospovidone was used as superdisintegrant. Different concentration were taken and they have concluded that as concentration of crospovidone increases disintegration time also increases. [5]
- Mayank. et al (2011) had formulated Lorazepam fast dissolving tablet.

Method was the same direct compression. Tablets were evaluated for

disintegration time, drug release, wetting time and also compared with marketed formulation. They have concluded that the prepared tablet showed better release profile than marketed formulation. Formulation containing 12% of Croscarmellose sodium showed disintegration in 33sec and showed 95.99% drug release within 10min. [6]

- Rahul Nair et al (2011) had prepared polymorphs of Rizatriptan benzoate by solvent evaporation method. They have used many solvents like tween 80, PEG, Polyvinyl pyrrolidone, methanol. Four different polymorphs were prepared and evaluated by Dissolution study, differential scanning calorimetry, infra-red absorption spectrum, scanning electron microscopy. They observed change in melting point of form I and form II with compare to original drug. Final conclusion was that polymorphs prepared by tween 80 showed better drug release than other forms. [27]
- Rahul Nair et al (2011) had developed solid lipid nanoparticles of Rizatriptan. Solid lipid nanoparticles were prepared by modified solvent Injection method. Characterization were carried out for shape, particle size, surface morphology and drug entrapment. They observed spherical shape, with particle size of 141.1-185.7 nm and smooth surface. The prepared particles showed sustained release of drug. [28]
- Raghavendra Rao. et al (2010) had developed fast dissolving tablet of chlorthalidone which have low dissolution rate by different techniques to improve its dissolution rate. From that they have showed the sublimation as best technique in which they had used 40% of camphor increases dissolution rate of drug. [7]

- Shailesh. et al(2010)had prepared promethazine thiolate fast dissolving tablet using sodium starch glycolate, ac-di-sol and crospovidone as a super disintegrating agents. Tablets were prepared by direct compression method and evaluated for post compression parameters. They have concluded that tablets containing ac-di-sol have better drug release and in vitro dispersion time. [8]
- Raghavendra Rao. et al (2010)had developed fast dissolving tablet of Carbamazepine by using solid dispersion technique. They have used different concentration of super disintegrating agent that is croscarmellose sodium and studied effect of various carriers. From the study they have concluded that formulation having mannitol as a diluent showed disintegration in 12-18 seconds. [9]
- Shirsand. *et al* (2010)had formulated and evaluated fast dissolving tablet by using latest solvent evaporation technique. Sodium starch glycolate and Crospovidone was being used as novel co-processed super disintegrating agents. They have concluded that formulation having 4% w/w of crospovidone was the optimized batch. [9]
- Keny RV *et al* . (2010)had formulated Rizatriptan benzoate fast dissolving tablet for intended benefit. Direct compression was used to prepare tablets. Crospovidone was used as super disintegrant. Tablets were evaluated for all pre compression and post compression parameters. Assay was performed by high performance liquid chromatography. [18]
- Gudas GK *et al*. (2010)had developed chlorpromazine fast dissolving tablet. The tablets were prepared by using croscarmellose sodium,

sodium starch glycolate, L-HPC, crospovidone, pre-gelatinised starch by using direct compression. Blend was evaluated for flow property and tablets were characterized for its thickness, hardness, disintegration and dissolution. [12]

- Randale SA *et al.* (2010) had developed taste masked rapid disintegrating tablet of metoclopramide. Taste masking was done by the extrusion-precipitation method by complexing drug with Eudragit in different ratio. All formulations of drug polymer complex was characterized for *in vitro* taste in simulated salivary fluid and drug content. Final conclusion was that the batch having drug polymer ratio 1: 2 was optimized for taste as well as for drug release. [11]
- Khemariya P *et al.* (2010) had developed meloxicam mouth dissolving tablet using sublimation technology. The tablets were formulated by wet granulation method. The tablets were characterized for all post compression parameters e. g. friability, hardness, wetting time and disintegration time. They have concluded that tablets prepared from sublimation of camphor were found better than tablet prepared by exposing to vacuum. [15]
- Bhardwaj S *et al.* (2010) had prepared aceclofenac fast disintegrating tablets. Tablets were prepared by direct compression technique using sodium starch glycolate as super disintegrant. All post compression parameters were tested for its performance. All the batches showed disintegration time within 28 sec. [16]
- El-Massik MA *et al.* (2010) had developed meclizine orally disintegrating tablets by using a maltodextrin. Tablets were prepared by direct

compression as well as wet granulation method. Effect of concentration of maltodextrin was characterized by tablet's disintegration time and hardness. They have concluded that maltodextrin up to certain level produces increase in disintegration but then after decreases. ^[17]

- Rajalakshmi G *et al.* (2010) had prepared pheniramine maleate orodispersible tablets. The tablets were formulated by direct compression method. sodium starch glycolate, croscarmellose sodium, low hydroxylpropyl cellulose, pre-gelatinized starch and crospovidone were used as superdisintegrants in different ratios. The blends were characterized for pre-compression parameters. Tablets were characterized for post-compression parameters. ^[19]
- Zade. *et al* (2009) had formulated Tizanidine Hydrochloride tablet and also prepared taste masked granules of drug using eudragit E 100 to make the tablet with no bitter taste. For preparation of taste masked granules mass extrusion technique was used. Tablet were prepared by synthetic disintegrants. The final conclusion was that tablets prepared by using superdisintegrants were better than prepared by sublimation method. ^[8]
- Mahamuni SB *et al* (2009) had developed fast dissolving tablet of Promethazine HCl, which can readily disintegrate in the saliva. Taste-masked granules were prepared to mask bitter taste of drug. The taste masked granules were formulated by Eudragit E-100 using extrusion method. Tablets were formulated using taste-masked granules with other excipients like microcrystalline cellulose and starch. ^[13]

- Shirsand SB *et al* (2009) had prepared prochlorperazine maleate fast disintegrating tablets using direct compression method. One natural superdisintegrant Mucilage of plantago ovata and one synthetic superdisintegrant crospovidone were used with microcrystalline cellulose and mannitol to give sweet mouth feel. The prepared formulations were evaluated friability, wetting time, water absorption ratio, drug content uniformity, and *in vitro* dispersion time. Batch containing 8% w/w of plantago ovata mucilage was optimized from the data. [14]
- Kalia A *et al*. (2009) had designed oxcabazepine mouth dissolving tablets. Tablets were prepared using two different methods, direct compression and solid dispersion. Direct compression was used by crospovidone as a super disintegrating agent and aspartame sweetener. Solid dispersions of drug were carried out with PVP K-30 and PEG 6000 in different concentration ratios to increase its solubility. They concluded that solid dispersions with drug: carrier in ratio of 1: 2 showed maximum drug release. From the comparison of two technologies solid dispersion was found better and gives satisfactory and reproducible results. [20]
- Swamy PV *et al*. (2009) had developed pheniramine maleate orodispersible tablets using effervescent method. tablets were prepared by using sodium starch glycolate, crospovidone, pregelatinized starch and croscarmellose sodium with sodium bicarbonate and tartaric acid. Prepared tablets were evaluated for all post-compression parameters. The final conclusion was that the

formulation having 4% crospovidone mixed with tartaric acid and sodium bicarbonate was best. [21]

- Devireddy SR *et al.* (2009) had designed levocetirizine dihydrochloride orally disintegrating tablets of using synthetic superdisintegrants (sodium starch glycolate, croscarmellose sodium, and crospovidone) and mannitol as a diluent. Taste masking was done by poly kyon T-134, Indion-204 and Tulsion-335 ion exchange resins. The drug- resin complex was formulated using the kneading method. By varying the concentration of ion-exchange resin and superdisintegrant using wet granulation method by PVP k-30 used as binder. The tablets were evaluated for disintegration time and degree of taste masked. [22]
- Okuda Y *et al.* (2009) had developed new preparation method for orally disintegrating tablet that has high hardness and less disintegration time. For that they have prepared rapid disintegrating granules using mannitol or lactose, saccharide was spray coated with corn starch suspension in fluidized-bed granulator. Crospovidone or hydroxypropyl starch was included in suspension as additional superdisintegrants. The prepared granules have large surface area, micro pore and low particle size distribution. Tablets prepared using this granules increased hardness and increased disintegration time by decreasing plastic deformation. [23]
- Singh J and Singh R. (2009) had developed meloxicam orodispersible tablets and optimized the formulation using a 2^2 factorial design for enhanced bioavailability. Tablets were prepared by wet granulation method having non-aqueous solvent. Crospovidone was used as

superdisintegrant and mannitol as diluent as well as taste masking agent. Four batches were carried out to investigate optimum concentration of crospovidone and mannitol. [26]

- Giri TK et al (2009) had designed diazepam rapidly disintegrating tablets. The tablets were formulated by the wet granulation method. Bitter taste of drug was masked by solid dispersion using PEG-4000 and/or PEG-6000. Tablets were prepared using different concentration of PEGs. A 3^2 factorial design was applied to optimise the formulation and to decrease experimental run. They have concluded that the tablets prepared by PEG-4000 in lowest concentration was disintegrated within 33 sec and drug release was found 85% within 12 mints. [24]