CHAPTER 2

REVIEW OF LITERATURE

Gamal et al., 2013 utilized nisoldipine as a component for the preparation of fast disintegrating tablets. Intra-oral administration was used for these fast disintegrating tablets from binary solid dispersions prepared using hydroxyl propyl methyl cellulose, polyethylene glycol 6000 and polyvinyl pyrrolidone (PVP) as carriers. They investigated that the SD formulations enhanced the dissolution rate which was compared to that of the pure drug. The study established a fast disintegrating tablet for intraoral administration [13].

Alirezahomayouni et al., 2013 formulated and characterized celecoxib solid dispersions and compared the effect of poloxamer 188 and PVPk30 as carriers. Solid dispersions were prepared by solvent evaporation and melting process. Different drug carrier ratios was employed for these methods. The study evaluated that the dissolution rate enhancement were found to be high due to the effect of PVP when compared with that of the other carrier. PVP can be considered as a more suitable carrier. This is because of the presence of a higher Tg and also with a higher effect on dissolution rate. The study was conducted when it was compared to poloxamer 188 in solid dispersion formulation of celecoxib [14].

Bobe KR et al., 2011 formulated and evaluated the solid dispersion of Atrovastatin by using various carriers. Mannitol, PEG 4000, Polyvinyl pyrrolidine were utilized as carriers. The solid dispersions were characterized by solubility determination and drug release characteristics. The study revealed that solid dispersions with PEG 4000 gave highest dissolution and enhanced solubility. The investigation also reports that the drug is converted into amorphous form [15].

Lokamatha K M et al., 2011 investigated dextran as the carrier to increase the drug release rate of nevirapine with solid dispersion technique. Freeze drying method showed enhanced drug release character than kneading method as well as physical mixture. The highest drug release was observed in 1:1 drug carrier ratio. The study revealed the importance of low molecular weight dextran in enhancing the drug release pattern and to enhance the oral bioavailability [16].
Arun Prasad K et al., 2010 prepared terbinafine hydrochloride solid dispersions with the incorporation of PEG and PVP as water soluble polymers. Melting method and solvent method were employed in the preparation of SDs. From the evaluation parameters it was concluded that the drug release rate much enhanced in SDs when compared with the pure drug and the physical mixtures [17].

Bhawan deep bill et al., 2010 has done the work on improving the solubility of Glimepride drug by using solid dispersion techniques. Poloxamer 188 and Poloxamer 407 were employed as carriers for preparing solid dispersions. The SDs which gave greater dissolution rate were formulated into tablets with super disintegrants. In the tablet formulations the tablets having 5% croscarmellose sodium exhibits lesser disintegration time and greater dissolution rate [18].

Monica Rao et al., 2010 investigated on preparation and evaluation of simvastatin surface solid dispersions. The work was carried to enhance the drug release character of simvastatin to increase faster onset of action. The research work employed with superdisintegrants in 3 different ratios. The surface solid dispersions were prepared by co evaporation method. The study revealed that the crystallinity of pure simvastatin is very much reduced in solid dispersions which showed greater drug release rate of simvastatin [19].

Rajanikant C Patel et al., 2010 utilized solid dispersion technology to obtain rapid drug release of furosemide. The main formulation problem of furosemide is its insolubility in gastric fluid. PEG 6000 and MCC were employed to prepare the solid dispersions. The study revealed that the bioavailability of furosemide can be enhanced by solid dispersion technology. The results showed, there is a possibility of reducing the drug dose [20].

Prasanthi N.L et al., 2010 formulated the lacidipine SDs with PEG 4000, PEG 6000, hydroxy ethyl cellulose and dextrin. The study was carried to enhance the drug release pattern of lacidipine. The study concluded that the drug release pattern of lacidipine was remarkably enhanced when prepared as its solid dispersions [21].

Choudhary D et al., 2009 were made an attempt to enhance the drug release rate of glipizide using solid dispersion technique. In this study they utilized P407 and P 188 as water soluble carriers and kneading technique was employed for preparation. The
study revealed that the prepared solid dispersions had greater dissolution rate compared with pure glipizide [22].

Newa M et al., 2008 investigated the dissolution of ibuprofen. This was performed using solid dispersion with the poloxamer 407. The greater dissolution rate was achieved by the preparation of its solid dispersions and characterized by DSC, SEM, FT-IR. It was evaluated for its in-vitro ibuprofen release and solubility. The data was obtained from the comparison of improved dissolution, $C_{\text{max}}$, solubility, and AUC of ibuprofen from different hydrophilic poloxamers. This indicated that the preparation of ibuprofen Solid Dipersions using Poloxamer 407 which was a meltable polymer can be taken as an optimistic approach for improving its solubility and also for its absorption rate, dissolution etc. [23]

Rakesh P. Patel et al., 2008 formulated a solid dispersion of Furosemide. PEG 6000 and PVP K30 were utilized as carriers for the preparation. The study showed there is a marked enhancement of solubility in solid dispersions by solvent method [24]

Yusuke Shibata et al., 2008 formulated a solid dispersion of indomethacin. A twin-extruder of the kneader was utilized for the formulation along with crospovidone. The solid dispersion particles of indomethacin had an improved solubility. It showed an increase of about four times compared to that of the crystalline indomethacin [25].

Alazar N. Ghebremeskel et al., 2007 investigated the effect of surfactants in the formulation of solid dispersion. The study concluded, using surfactants in solid dispersion can increase the drug release character of poorly soluble drugs [26].

Evangelous Karavas et al., 2007 prepared particulate solid dispersions of felodipine. The study shows mechanism of drug release depends on particle size of the drug. Also it was concluded that the polymer properties plays main role in drug release mechanism [27].

Deepti et al., 2007 investigated on amalgamation technique for preparing glibenclamide solid dispersions. PEG 600 and gelucire were used as carriers. The SDs were also prepared with melt absorption techniques. There was an increased drug release of glibenclamide observed in their solid dispersions [28].
S.T. Prajapati et al., 2007 carried out study to enhance dissolution properties of Carbamezepine by solid dispersion method using PVP K 30, PEG 4000 & 6000 [29].

Hishman S. Abou- Auda et al., 2006 studied on the solubility, bioavailability and hypoglycemic effect of Gliclazide β-cyclodextrin complexes [30].

Ilse Weuts et al., 2005 formulated loperamide solid dispersions. Spray drying technology was used for this study. The study investigated the properties and stability of these solid dispersions [31].

Martina Maria Smikalla et al., 2005 investigated about stability of nimodipine SDs with povidone K17 [32].

Nora Anne Urbanetz et al., 2005 studied on dissolution properties and physico chemical characterisation of solid dispersions of Nimodipine and PEG 2000 [33].

Siavoush Dastmalchi et al., 2005 prepared the solid dispersions of Glibenclamide using microcrystalline cellulose as carrier by solvent deposition technique. The dissolution measurements demonstrated that a significant increased dissolution rate was obtained with solid dispersion prepared rather than the pure drug and physical mixture [34].

Bhaskar Chauhan et al., 2005 prepared solid dispersions of Glibenclamide With glucires as carriers. Solid dispersions prepared by this technique showed remarkable enhancement of drug release rate when compared with pure drug [35].

Bassam M. Tashtoush et al., 2004 studied on the in vitro and in vivo evaluation of Glibenclamide with PEG 6000 and Gelucire 44/14 solid dispersion. There was a marked difference between the solid dispersion of Glibenclamide with PEG 6000 & Gelucire 44/14 when compared with the marked product [36].

Prasad et al., 2003 developed a method for the enhancement of dissolution and bioavailability of Mebendazole. The Mebendazole with β cyclodextrin molecular inclusion complex gave highest dissolution rate than the physical mixture and pure drug [37].

Saha et al., 2001 were studied about the solid dispersion of Nimesulide and Ibuprofen. They used different carriers such as β- cyclodextrin, Micro Crystalline
Cellulose, PVP K-30, PEG 4000 & 6000, sucrose, mannitol, sorbitol, DL-alanine, for the preparation of solid dispersions [38].