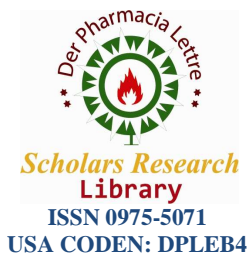




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## Formulation of fast dissolving tablets for olmesartan using hydroxy propyl $\beta$ -Cyclodextrins

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### ABSTRACT

The main objective of the research work is to improve the solubility and dissolution rate of olmesartan medoxomil by complexation with HP  $\beta$ -Cyclodextrins. The inclusion complexes were prepared by kneading method and solvent evaporation method. The prepared complexes were characterized by Fourier Transform Infrared Spectroscopy (FTIR) and by scanning electron microscopy (SEM). The FTIR spectra of olmesartan/ HP  $\beta$ - Cyclodextrins solid complexes showed that olmesartan medoxomil could form inclusion complex with HP $\beta$ - Cyclodextrins in solid state. From the prepared inclusion complexes, fast dissolving tablets were formulated by using superdisintegrant like sodium starch glycolate in various concentrations (10-15%).The influence of diluents like direct compressible lactose and microcrystalline cellulose on the drug release was evaluated. Prepared tablets were evaluated for physical parameters and drug release by in vitro dissolution studies. Dissolution studies showed fast release of olmesartan medoxomil in tablets containing a high level of sodium starch glycolate and microcrystalline cellulose as diluent.

**Keywords:** Olmesartan medoxomil, HP $\beta$ -Cyclodextrins, Sodium starch glycolate, fast dissolving tablets.

### INTRODUCTION

The oral route of drug administration is the most common and preferred method of delivery due to convenience and ease of Administration. From a patient's perspective, swallowing a dosage form is a comfortable and a familiar means of taking medication. Although the oral route of administration is preferred, for many drugs it can be a problematic and in efficient mode of delivery for a number of reasons [1,2]. Limited drug absorption resulting in poor bioavailability is paramount amongst the potential problems that can be encountered when delivering an active agent via the oral route. The need for non - invasive drug delivery systems continues due to patient's poor acceptance and compliance with existing delivery regimes, limited market size for drug companies and drug uses coupled with high cost of disease management. ODT is one such dosage form which is useful for, geriatric patients mainly suffering from conditions like hand tremors and dysphasia. Pediatric patients who are unable to swallow easily because their central nervous system and internal muscles are not developed completely [3,4]. Traveling patients suffering from motion sickness and diarrhea that do not have easy access to water. Patients with persistent nausea for a long period of time are unable to swallow. The enhancement of solubility and dissolution rate of poorly water soluble drugs remains one of the most challenging aspects of drug development. Several approaches have been followed in improving solubility of such drugs, one being complexation using cyclodextrins (CDs). One of the most important characteristics of CDs is their ability to form inclusion complexes to improve pharmaceutical

properties like solubility, dissolution rate, bioavailability, stability and even palatability without affecting their intrinsic lipophilicity or pharmacological properties [5-7].

In the present investigation, olmesartan medoxomil was selected as a drug candidate for developing Fast dissolving drug delivery system. Olmesartan medoxomil is the angiotensin II receptor blocker used for the treatment of hypertension. It is white to light yellowish-white powder or crystalline powder. It is practically insoluble in water and sparingly soluble in methanol. It is well absorbed by oral route and used in hypertension. Its oral bioavailability is 26 % and having 99 % plasma proteins binding. It is metabolized in liver. Elimination half life of olmesartan medoxomil is 13 hrs [8,9].

Based on the above biopharmaceutical properties, olmesartan medoxomil was selected as a drug candidate for improving its solubility and dissolution rate by Inclusion complexes using HP  $\beta$ CD [9] as carriers prepared by kneading method and solvent evaporation method. They were evaluated for drug release studies. Further the prepared complexes were formulated as fast dissolving tablets using super disintegrant in various concentrations. The influence of diluents on the drug release was also evaluated.

## MATERIALS AND METHODS

Olmesartan Medoxomil (OLM) was a gift sample from M/S Apotex pharma Pvt Ltd, Bangalore, Croscarmellose sodium (CCS) were gift samples obtained from S.D fine chem...ltd., hydroxypropyl  $\beta$ -Cyclodextrins was a gift sample from yarrow chem. Ltd, Mumbai, Sodium starch glycol ate (SSG) from M/s. NATCO Pharma Ltd, Hyderabad. Potassium dihydrogen phosphate, Sodium hydroxide, Methanol and ethanol were procured from S.D Fine Chem., Ltd., and Mumbai. All other materials used were of pharmacopoeial grade.

### Phase-Solubility Studies:

Phase-solubility studies were carried out according to the method reported by Higuchi and Connors. It Permits the evaluation of the affinity between the carrier and drug in aqueous solution and to know the stable inclusion complex. An excess amount of olmesartan was added to an aqueous solution into conical flasks with increase in concentration of HP $\beta$ -cyclodextrins (2-10mm). These flasks were shaken at 25°C for 48 hours. Then the samples were filtered through a what man filter paper. The filtrate was diluted and assayed for OLM content spectrophotometrically at 256 nm. The apparent stability constants were calculated from the phase solubility diagrams and according to equation,  $K_c = \text{Slope} / \text{Intercept} (1 - \text{slope})$ . The results were shown in table 1 and the phase solubility curve was shown in figure 1.

### Preparation of cyclodextrin inclusion complexes

All the binary mixtures were prepared in a 1:1 molar ratio of drug and HP $\beta$ -CD on the basis of the results obtained from the preliminary phase solubility studies. The poorly soluble olmesartan medoxomil was incorporated into the HP $\beta$ -cyclodextrins polymer by using the following different two different techniques i.e. Kneading method and Co-evaporation method [11].

### Evaluation of Complexes

#### Estimation of drug content for inclusion complexes

Inclusion complexes of OLM equivalent to 40 mg was weighed and transferred into a 100ml volumetric flask. To this small quantity of methanol was added to dissolve and shaken occasionally for about 15 minutes and the volume was made up to 100ml by adding 6.8 p<sup>H</sup> buffer. The solution was filtered by using a Whatman filter paper. The filtrate was subsequently diluted with 6.8 p<sup>H</sup> buffer and the absorbance was measured at 256nm using 6.8 p<sup>H</sup> buffer as blank. This test was repeated six times (N=6).

### *In vitro* dissolution studies for OLM- HP $\beta$ CD complexes

Dissolution studies on prepared inclusion complexes were performed in a calibrated 8 station dissolution test apparatus (LABINDIA DS8000) equipped with paddles (USP apparatus II method) employing 900 ml of 6.8 p<sup>H</sup> buffer as dissolution medium. The paddles were operated at 50 rpm and temperature was maintained at 37° C  $\pm$  1° C throughout the experiment. The samples (10 ml) were withdrawn at 5, 10, 15, 20, 30 and 45 minutes and replaced with equal volume of same dissolution medium to maintain the constant volume throughout the experiment. Samples with drawn at various time intervals were suitably diluted with same dissolution medium and the amount of the drug dissolved was estimated by ELICO double beam U.V spectrophotometer at 256 nm. The dissolution studies

on each formulation were conducted in triplicate. From the dissolution profiles various parameters like  $T_{50}$ ,  $T_{90}$  and  $DE_{30\%}$  were calculated [11].

The dissolution studies on each formulation were conducted in triplicate. The dissolution profiles for all the inclusion complexes were shown in figure 2.

#### **Characterization of inclusion complexes**

The prepared inclusion complexes are characterized by Fourier transform Infrared spectroscopy (FTIR) and Scanning Electron Microscopy.

#### **Fourier Transform Infrared Spectroscopy:**

Infrared spectra of drug and optimized tablet formulations were recorded by KBr pellet method using Fourier Transform Infrared Spectrophotometer. A base line correction was made using dried potassium bromide and then spectra of dried mixtures of drug and inclusion complexes with potassium bromide were recorded. Pure drug and optimized tablet formulations were subjected for FTIR analysis using FTIR spectrophotometer to study any interactions between drug and excipients. The results were shown in figure 3.

#### **Scanning Electron Microscopy (SEM)**

The samples (Pure drug and inclusion complexes) were coated with a thin gold layer by sputter coater unit (SPI, Sputter, USA). Then, the SEM photographs were taken by a scanning electron microscope (Scanning electron microscope JSM-6390, Japan) operated at an accelerated voltage of 15kV. The SEM images were shown in the figure 4.

#### **Preparation of olmesartan medoxomil fast dissolving tablets from inclusion complexes**

Fast dissolving tablets of OLM with taste masked inclusion complex (equivalent to 40mg of drug) were prepared by direct compression method. The super disintegrants (Sodium starch glycolate and Cross carmellose sodium) in varying concentration (10-15%) were used to develop the tablets. The weight of all the tablet formulations was maintained uniformly by using microcrystalline cellulose ( $p^H$  102) and direct compressible lactose as diluents, stevia as natural sweetening agent, sodium saccharine as artificial sweetener. The compositions of various tablet formulations were given in table 2.

The materials were individually weighed, passed through sieve no: 80 and blended for 15 minutes by using double cone blender. The powder mixture was then lubricated with 1% talc and magnesium stearate and directly compressed as tablets using 10 station rotary tablet compression machine to produce tablets weighing 300 mg. To minimize the processing variables all batches of tablets were compressed, under identical condition. The powder blends were evaluated for flow properties such as angle of repose, compressibility index and Hausner's ratio.

The compressed tablets were further evaluated for their physical parameters such as weight uniformity, hardness, friability, drug content, *in vitro* dissolution and fast dissolving parameters like, wetting time, *invitro* dispersion time, moisture uptake studies etc.

#### **Evaluation of Tablets**

Physical parameters such as weight variation, hardness, friability and disintegration were evaluated for prepared tablets and their results shown in table no.25-26. The prepared orodispersible tablets were further evaluated for physical parameters like drug content, wetting time, water absorption ratio, moisture uptake studies and *in-vitro* dissolution studies and their results were shown in table no. 27 & 28 and dissolution studies in table no.38-39. The moisture uptake study is carried out by keeping ten tablets along with calcium chloride in a desiccator maintained at 37 °C for 24 hrs to ensure complete drying of the tablets. The tablets are then weighed and exposed to 75% RH, at room temperature for 2 weeks. The required humidity can be achieved by keeping saturated sodium chloride solution in the desiccator for 24 hrs. The tablets are reweighed and the percentage increase in weight is recorded. If the moisture uptake tendency of a product is high, it requires special dehumidified area for manufacturing and packing. Wetting Time is carried out by taking five circular tissue papers of 10 cm diameter were placed in a Petri dish with 10 cm diameter. 10 ml of water containing Amaranth, water soluble dye was added to the petri dish. One tablet was carefully placed on the surface of the tissue paper. The time required for water to reach upper surface of the tablet was noted as a wetting time. Water Absorption Ratio is carried out by taking a piece of tissue paper folded twice was placed in a small Petri dish (internal diameter = 6.5cm) containing 5 ml of buffer. A tablet was placed on

the tissue paper. The wetted tablet was weighed. The test was done in triplicate. The water absorption ratio (R) was determined according to the equation, Water absorption ratio (R) =  $(W_a - W_b) / W_a \times 100$ . Where,  $W_a$  is the weight of the tablets before the test and  $W_b$  is the weight of the tablet after water absorption. Dispersion test of orodispersible tablets were carried out by the method given by Gohel *et al.* for this a Petri dish was filled with 10 ml of buffer (6.8P<sub>H</sub>) and the tablet was carefully placed in the center of petridish and the time taken for the tablet to completely dispersion in to fine particles was noted.

#### **In Vitro Dissolution Studies**

Dissolution studies on each tablet formulation were performed in a calibrated 8 station dissolution test apparatus (LABINDIA) equipped with paddles (USP apparatus II method) employing 900 ml of 6.8 pH buffer as a dissolution medium. The paddles were operated at 50 rpm and temperature was maintained at  $37^\circ \text{C} \pm 1^\circ \text{C}$  throughout the experiment. The samples (10 ml) were withdrawn at 5, 10, 15, 20, 30 and 45 minutes and replaced with equal volume of same dissolution medium to maintain the constant volume throughout the experiment. Samples with drawn at various time intervals were suitably diluted with same dissolution medium and the amount of the drug dissolved was estimated by ELICO double beam U.V spectrophotometer at 256 nm. The dissolution studies on each formulation were conducted in triplicate. From the dissolution profiles various parameters like  $T_{50}$ ,  $T_{75}$  and  $DE_{30\%}$  were calculated.

#### **Accelerated stability Studies:**

The formulations which showed good *in vitro* performance were subjected to accelerated stability studies. These studies were carried out by investigating the effect of temperature on the physical properties of tablets and chemical stability of tablets containing drugs.

The optimized formulations were kept in petridishes after preparation and stored in thermo stated oven at a temperature and relative humidity of  $25 \pm 2^\circ \text{C}$ ,  $60 \pm 5\% \text{ RH}$  for 6 months and  $40 \pm 2^\circ \text{C}$ ,  $75 \pm 5\% \text{ RH}$  for 3 months. The tablets were evaluated for physical parameters drugs. Further these were subjected to drug release studies and to DSC analysis.

## **RESULTS**

#### **Phase solubility Studies**

Phase solubility study is useful in determination of inclusion complexation of drug with cyclodextrins in aqueous media. From the phase solubility studies it was observed that a linear increase in solubility with increasing concentration of HP $\beta$ -CDs which was shown in the figure 1. The slope values obtained were less than 1 (i.e.0.8), which indicated that the 1:1 molar ratio of drug- HP $\beta$  CD complex is stable. The stability constant,  $K_s$  was found to be  $615 \text{ M}^{-1}$  indicating the formation of 1:1 stable complex. The *in vitro* dissolution studies were performed for prepared inclusion complexes in 6.8 pH phosphate buffer and compared with that of pure drug and from these studies it was observed that the inclusion complex prepared by kneading method released the drug rapidly than the pure drug alone (Figure2).

#### **Characterization of Drug –HP $\beta$ Cyclodextrin Complexes**

The possible interaction between the drug and the carrier was studied by FTIR spectroscopy. IR spectra of pure olmesartan medoxomil showed characteristic peaks at  $3288 \text{ cm}^{-1}$  (Broad intermolecular hydrogen bond, O-H stretch),  $2972 \text{ cm}^{-1}$  (Aliphatic C-H stretch),  $1706 \text{ cm}^{-1}$  (C=O of carboxylic group),  $1474 \text{ cm}^{-1}$  (C-N stretch),  $1389 \text{ cm}^{-1}$  (in plane O-H bend),  $1052 \text{ cm}^{-1}$  (ring C-O-C stretch). The FTIR spectra of  $\beta$ -CD showed prominent peaks at  $3382 \text{ cm}^{-1}$  (O-H),  $2924 \text{ cm}^{-1}$  (C-H),  $1644 \text{ cm}^{-1}$  (H-O-H bending) and  $1028 \text{ cm}^{-1}$  (C-O-C). The IR spectra were given in the figure 3.

#### **Evaluation of Fast dissolving tablets**

Fast dissolving tablets of olmesartan were prepared by using superdisintegrant SSG in different concentrations i.e., 10 and 15%. Tablet formulations were further evaluated for physical parameters. Moisture uptake studies for orodispersible tablets were conducted to assess the stability of formulation. The results obtained were within the limits. The results of physical parameters evaluation were given in table 3.

#### **In Vitro Dissolution Studies**

The dissolution studies of fast dissolving tablets were performed in pH 6.8 buffer by using USP-II paddle method. Based upon the data obtained from the dissolution studies, various parameters such as  $T_{50}$ ,  $T_{75}$ ,  $DE_{30\%}$  and first

order and zero order release rate constants were estimated. The drug release from all the tablet formulations were found to release the drug at a faster rate than compared to pure drug. It was found that the tablet formulation with 15% SSG showed the rapid drug release when compared to pure drug and other formulations. The rate of drug release of tablet formulations was found to be linear with first order rate constant. The  $r^2$  values of all tablet formulations were in the range of 0.92 to 0.99. The results were given in the table 4. Hence it is suitable as fast dissolving tablets.

### DISCUSSION

From the phase solubility studies it was observed that a linear increase in solubility with increasing concentration of HP $\beta$ -CDs. Hence the drug Inclusion complexes were prepared by kneading method using HP  $\beta$ -CD in 1:1 molar ratio and these combinations were found to be stable and suitable for masking the metallic taste of drug and enhances the dissolution rate of olmesartan. From the *in vitro* dissolution studies it was observed that the inclusion complex prepared by kneading method released the drug rapidly than the pure drug alone.

The possible interaction between the drug and the carrier was studied by FTIR spectroscopy. In the FTIR study, the breakdown of the intermolecular hydrogen bond between the crystalline drug molecule and formation of hydrogen bond between the drug and the polymers might be related to the slight shift of the absorption band. However FTIR spectra of complexes showed that no changes have occurred in chemical structure. Broadening of peak indicates the formation of inclusion complex between the drug and HP $\beta$ -CD. DSC analysis was performed for the pure drug, HP  $\beta$ -CD and for complexes prepared by kneading method. From the DSC thermogram, it was observed that the drug was incorporated in the polymer, so the graph was extended. It indicated that there was no drug and polymer interaction.

From the prepared inclusion complexes fast dissolving tablets were prepared by using superdisintegrant SSG. The direct compression process was found to be suitable for compressing the tablet formulations as fast dissolving tablets. Tablet formulations were further evaluated for physical parameters. All the tablet formulations were found to be stable were within the I.P specified limits for weight uniformity, friability, and drug content. Moisture uptake studies for orodispersible tablets were conducted to assess the stability of formulation. The results indicated that tablets containing high concentration of superdisintegrants (SSG 15%) get softened and absorb more atmospheric moisture. MCC act as both disintegrant and diluent activity due to this release of drug is more.

The dissolution studies of fast dissolving tablets were performed in pH 6.8 hydrochloric acid buffer by using USP-II paddle method. The drug release from all the tablet formulations were found to release the drug at a faster rate than compared to pure drug. It was found that the tablet formulation KHF4 AND SHF4 with 15% SSG and avicel PH 102 as diluent showed the rapid drug release. This may be due to the remarkable rapid water penetration and extensive swelling capability of SSG. SSG was reported to possess capability to absorb water and swell about 300 times its volume and not affected by increase in compression pressure. Their dissolution profiles were shown in figure 6 & 7. The rate of drug release of tablet formulations was found to be linear with first order rate constant.

The optimized tablet formulations subjected to accelerated stability studies preparation and stored in thermo stated oven at a temperature and relative humidity of  $25 \pm 2^\circ\text{C}$ ,  $60 \pm 5\%$  RH for 6 months and  $40 \pm 2^\circ\text{C}$ ,  $75 \pm 5\%$  RH for 3 months. Then the samples of each type of formulations were evaluated for the earlier mentioned physical parameters. The tablets were evaluated for physical parameters drugs and for *in vitro* drug release.

DSC analysis was performed for the Pure drug, HP-  $\beta$ CD and for optimized formulations KHF4 and SHF4. DSC thermo gram for pure olmesartan shows onset of peak at  $185.3^\circ\text{C}$ , which represents the melting point of OLM. DSC thermo gram of formulations shows onset of peaks at  $183.5^\circ\text{C}$  and  $187.9^\circ\text{C}$ . The DSC thermo grams were shown in the figure 5.

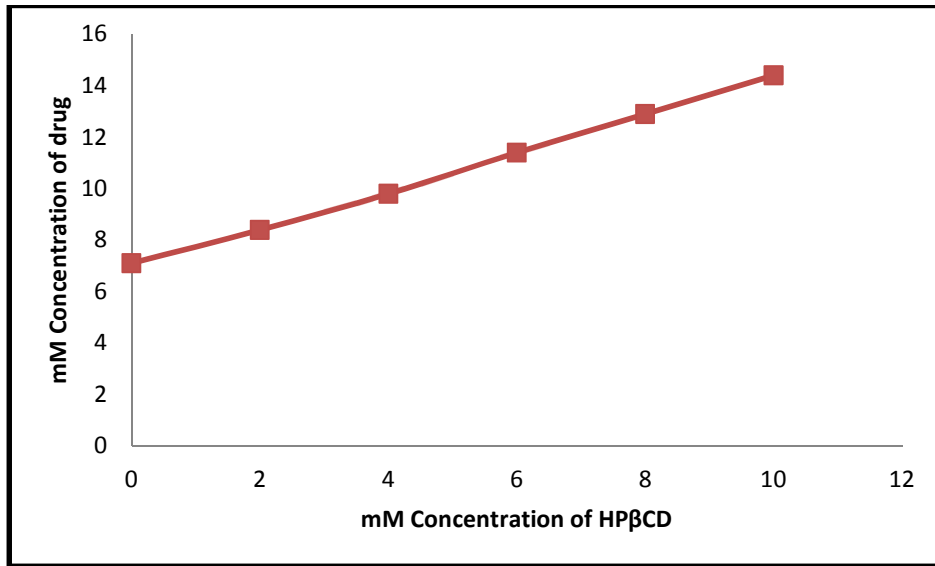


Figure.1: Phase Solubility Curve of Olmesartan Medoxomil.

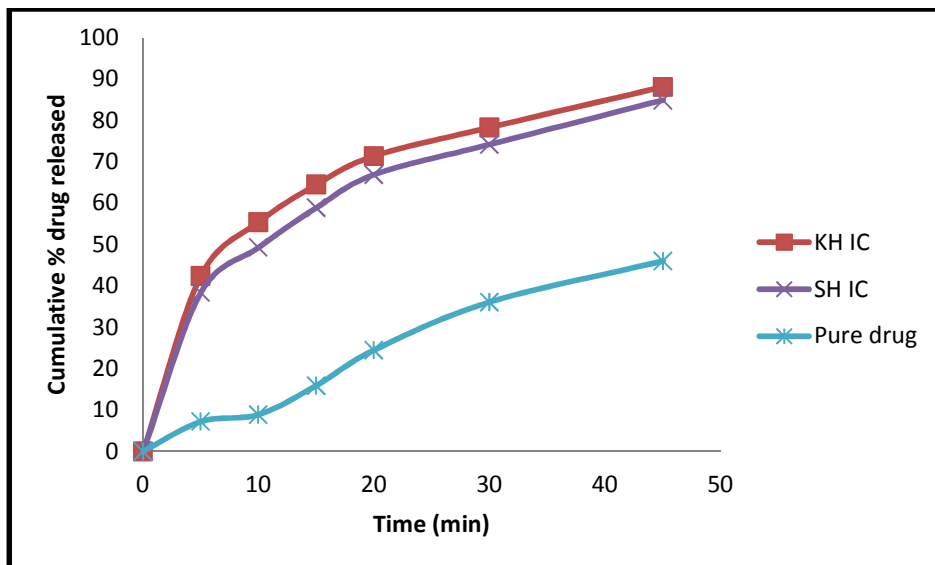
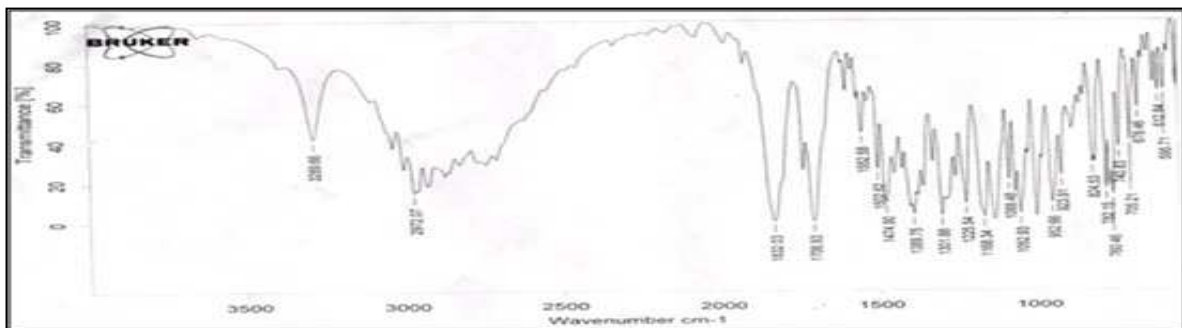


Fig.2: Dissolution Profiles of Prepared OLM-CD Complexes by Different Methods in Comparison With Pure Drug.



(A)

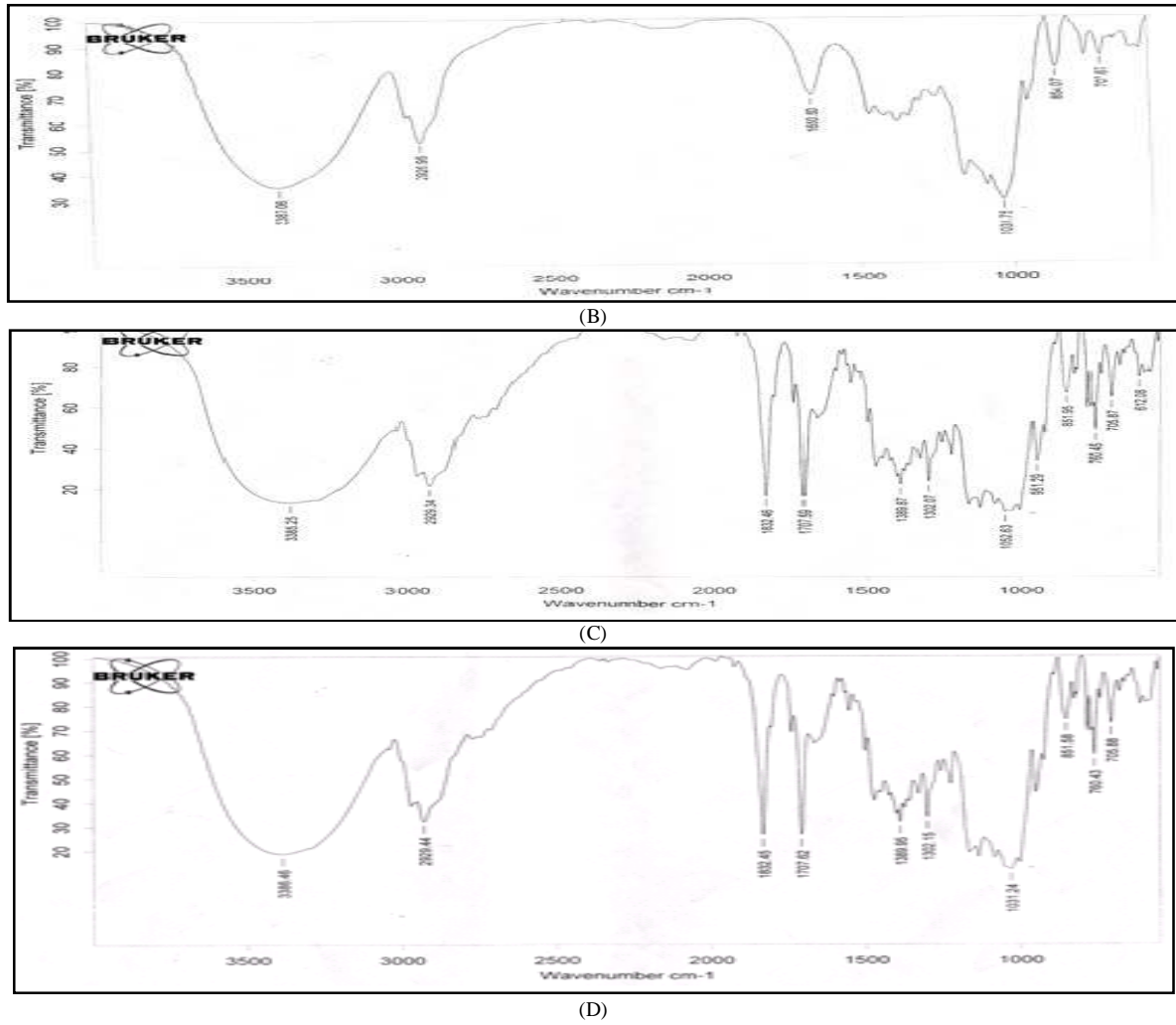


Figure 3: FTIR Spectra of a) Olmesartan Medoxomil b) HP  $\beta$ CD c) KH IC d) SH IC

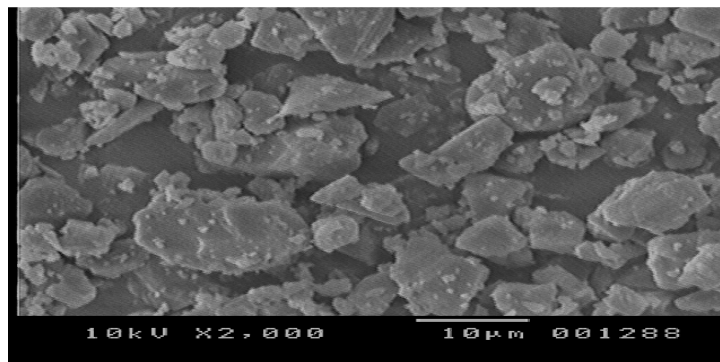


Figure 4 (a) SEM Photograph of Olmesartan Medoxomil

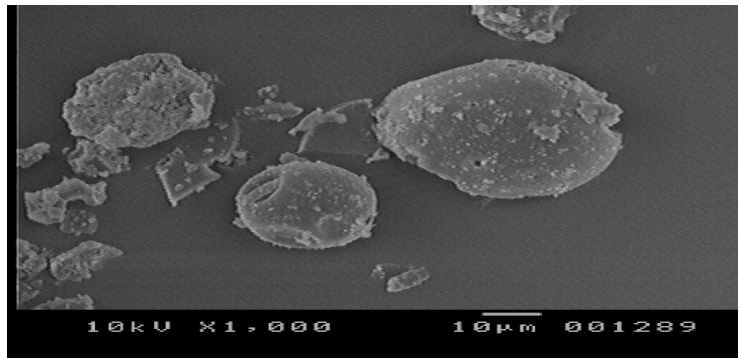


Figure 4 (b) SEM Photograph of Inclusion Complex (solvent evaporation method)

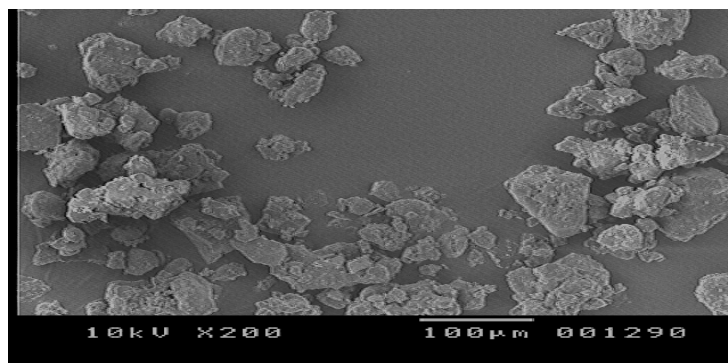
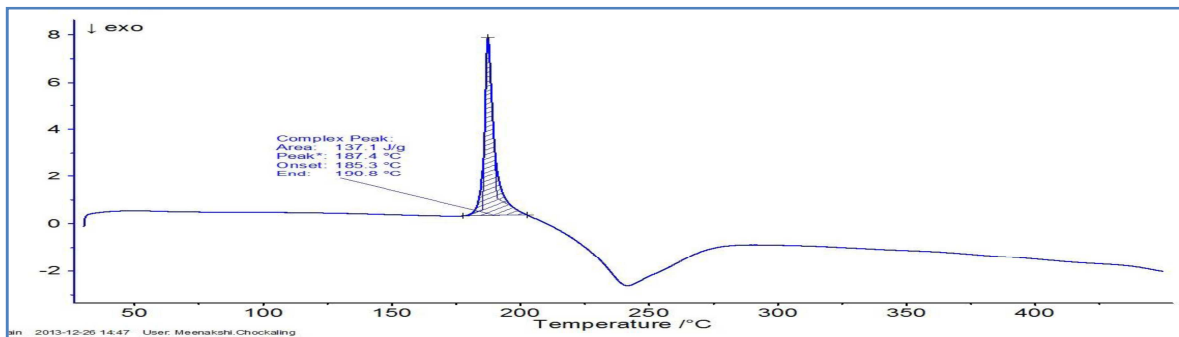
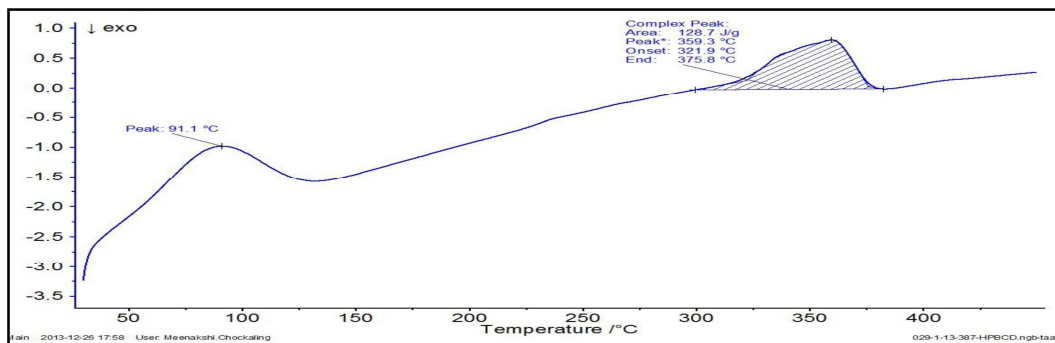


Figure 4 (c) SEM Photograph of Inclusion Complex (kneading method)

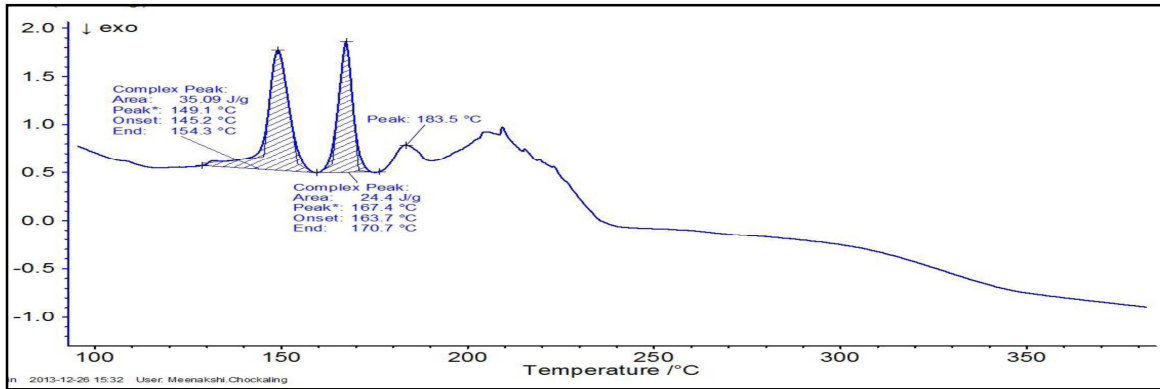


(a)

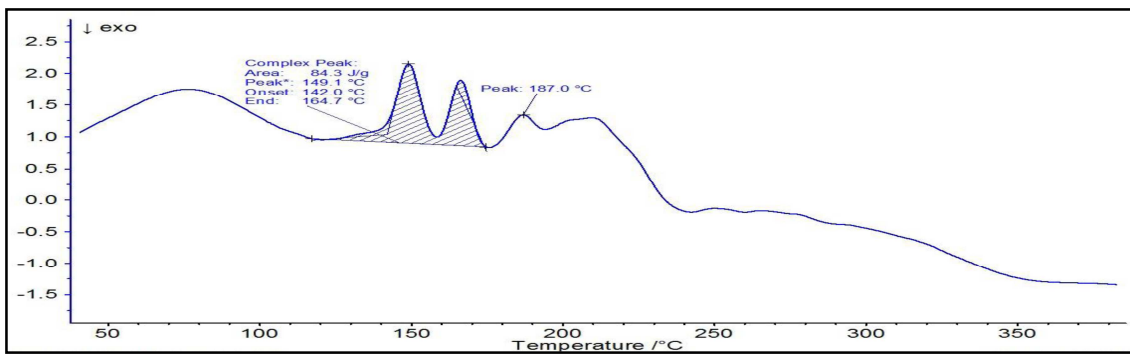


(b)





(c)



(d)

Figure 5: DSC Thermo grams of a) Pure drug b) HPβCD c) KH IC d) SE IC

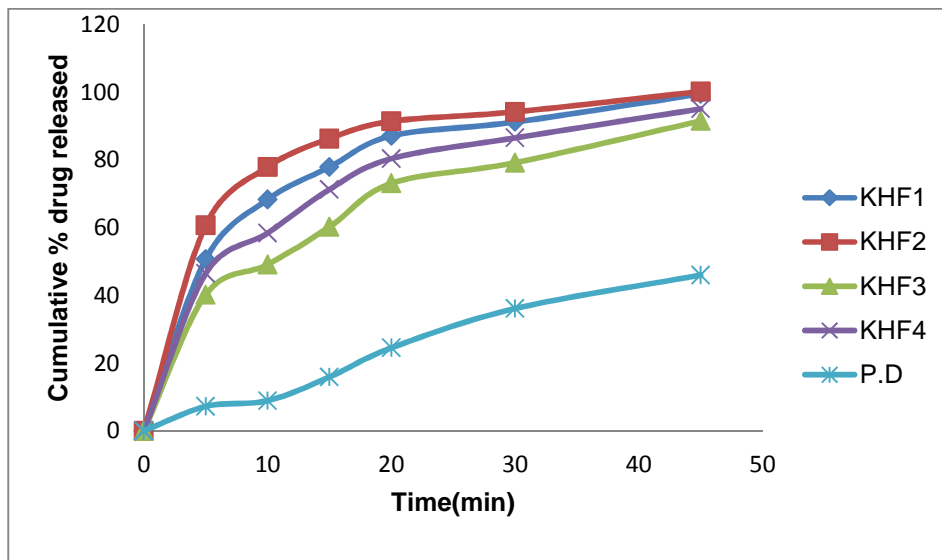


Figure 6: Drug Release Profiles of OLM - FDTs

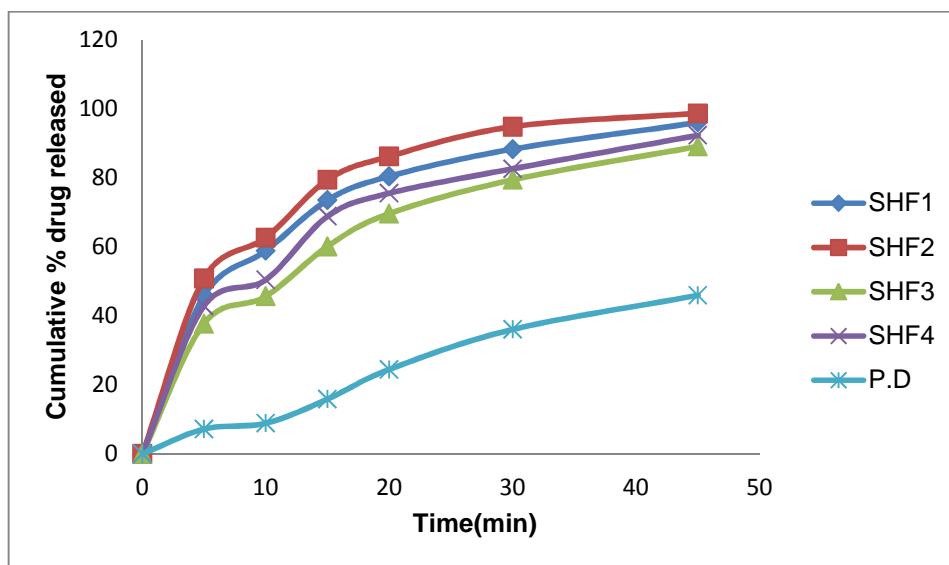


Figure 7: Drug Release Profiles of OLM - FDTs

Table.1: Phase Solubility Studies of Olmesartan Medoxomil

Concentration of cyclodextrins (mM/L)	Concentration of OLM -HPβCD (mM/L)
0	7.1
2	8.4
4	9.8
6	11.4
8	12.9
10	14.4

Table: 2 Composition of Fast dissolving Tablet Formulations Olmesartan Medoxomil containing Superdisintegrants by using kneading method and Solvent evaporation method

Ingredients (mg/Tablet)	KHF1	KHF 2	KHF 3	KHF 4	SHF1	SHF 2	SHF 3	SHF 4
Drug+HPβ CD complex (KM) (eq 40mg)	150.4	150.4	150.4	150.4	-	-	-	-
Drug+HPβ CD complex (SE) (eq 40mg)	-	-	-	-	150.4	150.4	150.4	150.4
Sodium starch glycolate	30	45	30	45	30	45	30	45
Mannitol	30	30	30	30	30	30	30	30
Direct compressed lactose	86.6	71.6	-	-	86.6	76.6	-	-
Avicel p <sup>H</sup> 102	-	-	86.6	71.6	-	-	86.6	71.6
Sodium saccharine	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Magnesium stearate	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Total wt (mg)	300	300	300	300	300	300	300	300

Table.3: Physical Parameters of OLM Orodispersible Tablets by kneading method

S.NO	Tablet Formulation	Weight uniformity (mg/tablet)	Friability loss (%)	Hardness (kg/cm <sup>2</sup> )	Drug content* (mg)
1	KM1	302±1	0.59	3.5±0.2	40±0.2
2	KM2	300±2	0.72	3.5±0.3	39±0.2
3	KM3	299±2	0.66	3.5±0.2	39±0.2
4	KM4	299±3	0.58	3.4±0.1	39±0.1
5	SE1	300±1	0.60	3.4±0.2	39±0.3
6	SE2	298±2	0.64	3.4±0.3	39±0.4
7	SE3	300±2	0.51	3.7±0.2	39±0.3
8	SE4	298±3	0.66	3.6±0.1	38±0.4

Table.4: Physical Parameters of OLM Orodispersible Tablets by kneading method

S.NO	Tablet Formulations	Wetting time (seconds)	Water absorption ratio	In vitro Dispersion time (seconds)	Moisture Uptake (%)
1	KM1	20.5±2.5	71.8	19±3.6	4.6±2.0
2	KM2	18.8±1.5	76.2	16±3.6	5.8±1.6
3	KM3	28.0±2.6	78.3	24±4.1	3.6±1.0
4	KM4	26.8±3.6	83.2	25±3.6	4.0±1.2
5	SE1	20.3±1.5	89.8	19±4.1	5.4±1.8
6	SE2	34.5±2.5	58.8	32±3.6	4.6±2.0
7	SE3	28.6±3.6	65.8	26±4.2	4.2±1.6
8	SE4	34.5±2.5	58.8	32±3.6	3.8±2.0

Table.5: In Vitro Dissolution Parameters of Olmesartan Fast Dissolving Tablets

S.NO	Tablet Formulations	T <sub>50</sub> %	DE <sub>30</sub> %	Zero order		First order		Hixson Crowell	
				R <sup>2</sup>	K (mg/min)	R <sup>2</sup>	K (min <sup>-1</sup> )	R <sup>2</sup>	K (mg <sup>1/3</sup> )
1	KM1	4	66.6	0.158	1.790	0.946	0.110	0.774	0.014
2	KM2	2	73.3	0.148	1.671	0.919	0.140	0.713	0.010
3	KM3	10	55	0.491	1.751	0.963	0.052	0.886	0.019
4	KM4	7	61.6	0.293	1.762	0.957	0.064	0.829	0.016
5	SE1	11	53.3	0.458	1.708	0.928	0.046	0.844	0.018
6	SE2	8	58.3	0.339	1.720	0.928	0.052	0.815	0.017
7	SE3	14	46.6	0.582	1.618	0.911	0.036	0.842	0.020
8	SE4	12	53.3	0.482	1.644	0.916	0.041	0.868	0.018

## CONCLUSION

The present study has shown that it is possible to increase the solubility and dissolution rate of poorly soluble drug olmesartan medoxomil by preparing it as inclusion complexes with HP  $\beta$ -cyclodextrins. The inclusion complexes exhibited faster dissolution characteristics as compared to that of pure drug. This was due to solubilizing effect of the complexing agent. It was found that the inclusion complex prepared by the kneading method, solvent evaporation method release the drug rapidly than the pure drug. The orodispersible tablets of olmesartan prepared with 15% Sodium starch glycolate as superdisintegrant and avicel Ph 102 as a diluents showed rapid drug release when compared to pure drug and other tablet formulations.

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