Panacea Journal of Pharmacy and Pharmaceutical Sciences 2017:6(1);121-144

International Journal

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Panacea Journal of Pharmacy and Pharmaceutical Sciences

ISSN: 2349 7025

Research Article **Volume 6 Issue 1**

FORMULATION AND CHARACTERIZATION OF ORAL THIN FILM CONTAINING DOMPERIDONE HCL

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Article history:

Received: 8th Nov 2017

Received in revised form: 19th Nov 2017

Accepted: 27th Nov 2017

Available online: 30th Dec 2017

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These authors have no conflict of interest to declare.

Abstract:

Domperidone Hydrochloride is a psycho stimulant drug which is freely soluble in water and other organic solvents. Drug is not having any bitter taste. The estimation of drug was carried out with the help of UV-spectrophotometer using the higher concentration range of 100 g/ml to1000 g/ml.

Simplex centroid design was applied to optimize the amounts of polymers. Percentage drug release at 2minutes, disintegration time and tensile strength were taken as responses and amounts of three polymers HPMCE5, HPMCE 15 and Maltodextrin were taken as formulation variables affecting the response. The polynomial equations showing relationship between formulation variables and each response were derived. Surface plots showing relationship between in dependent variables and responses were prepared. The surface plots and polynomial equations indicated the desired properties of drug release were obtained due to presence of HPMCE5. Required disintegration time was achieved with the help of HPMCE 5 and Maltodextrin. Good tensile strength was achieved with the help of HPMCE15. FTIR study was done to detect whether any chemical interaction occurs between drug and polymer. Further stability study was carried out at 40ºC/75% RH condition. The results of the stability study indicated formulations are stable there are no significant changes.

From the whole study it was understood that Mouth dissolving film is an acceptable dosage form for Domperidone Hydrochloride. These findings suggest that mouth dissolving film containing DomperidoneHydrochloride is likely to become one of the choices of Domperidone Hydrochloride preparations for treatment in the ADHD and Narcolepsy conditions.

Key words: Domperidone Hydrochloride, HPMC

INTRODUCTION

Orodispersible dosage forms are promising new approaches for drug delivery. They enable an easy application, as there is no need to drink high amounts of liquids or swallow large solid dosage forms. The aim of the study was to develop an orodispersible film (ODF) as an alternative to tablets, syrups or suppositories for the treatment of vomiting and nausea, especially for the pediatric population. Oral thin film, a new drug delivery system for the oral delivery of the drugs, was developed based on the technology of the transdermal patch. Fast-dissolving oral thin film is a solid dosage form, which disintegrate or dissolve within 1 min when placed in the mouth without drinking of water or chewing. Fast dissolving Film is prepared using hydrophilic polymers that rapidly dissolves on the tongue or buccal cavity, delivering the drug to the systemic circulation via dissolution when contact with liquid is made. Water-soluble polymers are used as film formers for fast dissolving films. The water-soluble polymers achieve rapid disintegration, good mouth feel and mechanical properties to the films. Fast-dissolving oral thin film offer fast, accurate dosing in a safe, efficacious format that is convenient and portable, without the need for water or measuring devices. In this review article the different polymers used for preparation of fast dissolving oral thin film like Pullulan**,** Gelatin**,** Sodium Alginate**,** Pectin**,** Rosin**,** Starch**,**
Chitosan are discussed together with th physicochemical properties and film forming properties.

Importance of oral drug delivery systems

Fast Drug Delivery Systems are rapidly gaining interest in the pharmaceutical industry. These systems either dissolve or disintegrate generally within a minute without needing water or chewing. Recently orodispersible films have been proposed which rapidly dissolves or disintegrate into buccal cavity. Alternative to fast-dissolving tablets it definitely eliminates patients' fear of chocking.[1] Orodispersible formulations are beneficial especially for the paediatrics but also for the geriatric population as swallowing high volumes of liquids can be avoided.[2]

An important benefit of these dosage forms is accurate dosing as compared to liquid dosage form, no water is needed and there is no fear of choking as compared to tablets and capsules.[3] Also, although oral disintegrating tablets disintegrate quickly, their disintegrated materials remain insoluble until swallowing.[4] The rapidly dissolving dosage forms are referred by various names by researchers like orodispersible film,

mouth dissolving, quick disintegrating, orally disintegrating, mouth dissolve or melt in mouth dosage forms.[5]These are ultra-thin postage stamp size with an active agent or pharmaceutical excipients. Since the sublingual mucosa is relatively permeable because of thin membrane and is highly perfused, rapid drug absorption and instant bioavailability is possible and this leads to quick-onset of drug action. Since the drug is directly absorbed into the systemic circulation, degradation in the gastrointestinal (GI) tract and first pass effect can be avoided.

Release mechanism [1,2]

The delivery system is simply placed on a patient's tongue or any oromucosal tissue. Instantly wet by saliva due to presence of hydrophilic polymer and other excipients, the film rapidly hydrates and adheres on to the sight of application and dissolves to release the medication for oromucosal absorption. It rapidly disintegrates or dissolves or disintegrates to release the medicine for mucosal absorption or with modification, allows for oral GIT absorption with quick dissolving properties.

METHODOLOGY

Preparation of Film by Solvent Casting Method

Various methods have been used for film preparation. Among al l the methods, solvent casting method was the used to get a good and smooth film. Mouth dissolving film of Domperidone HCl was prepared by the solvent-casting method. Aqueous solution was prepared by dissolving the selected polymers in 25 ml distilled water and was kept for 1h to remove all the air bubble sent rapped. Then API and plasticizer were dissolved in this polymeric solution. Then the mixture solution was casted as a film on to a plastic petridish and it was dried in the oven at 50°Cfor24
h. The film was carefully removed from the petridish, checked for any imperfections. The samples were wrapped in but terpaperand aluminium foiland stored in dessicator until furth eranalysis.

Optimization of Mouth Dissolving Film components

The place films were prepared using different poly merlike Maltod extrin,HPMCE3,HPMC E5 and HPMC E15 by solvent-casting method. Polymers were selected from the above placebo film in accordance to appearance by visual in section and disintegration time. Ani dentical approach was used to optimize plasticizer(Glycerin, Propyleneglycol) using the previously optimized concentration of

respective components. Plasticizer was optimized on the bases of film stensile strength, folding endurance and disintegration time.

EVALUATION PARAMETERS FOR PREPARED FILMS

Thickness Measurement

The thickness of the Mouth dissolving film(2×2cm^2)was determined by using ascrew gauge. The thickness of each film at three different places was determined and standard deviation was also calculated.

Drug Content Uniformity

Mouth dissolving film of size4cm^2 was cut in to small pieces and transferred in to a graduated glass stoppered flask containing 10mL of 6.8 pH phosphate buffer. The flask was kept for 24hrs. The solution from the flask was filtered through what man filter paper and the amount of drug present was determined by UV spectrophotometric method at 257.2nm wavelength.

Weight Variation

Three films of size (2×2cm^2) from every batches of mouth dissolving film were weighed on an electronic balance (CitizonCY220C, Mumbai, India) and the average weight and standard deviation was calculated.

Tensile Strength

Mechanical properties of the polymeric mouth dissolving film were conveniently determined by measuring their tensile strength. The tensile strength of the mouth dissolving film was determined using handmade tensile strength instrument. The mouth dissolving film was fixed to the assembly, the weights required to break the film were noted.

Percentage Elongation

Percentage elongation was calculated by measuring the increase in length of the film after tensile strength measurement.

% Moisture Uptake

Formulation was exposed to an atmosphere of 84% RH at28°Cfor three days using a saturated solution of NaCl. After three days the films was removed, weighed and percentage moisture absorbed was calculated. Average percentage moisture absorption of each film was calculated.

Invitro Disintegration Time

The test was performed using the same method as mentioned by setouhyetal. With sligh modification. The film size required for dose delivery (2×2cm) was placed on glass petridish containing 10mLof distilled water. The time required for breaking of film was noted as *invitro* disintegration time.

Invitro Dissolution study

The test was performed using the same method as mentioned by Dinge et al with slight modification. A film of $4cm^2$ was placed in a glass petridish and 25mL of dissolution medium (phosphate-bufferedsalinepH6.8) was added. Stirring speed of 100 rpm was selected for dissolution of all the batches. Aliquot of 2.5ml was withdrawn and replaced with equal volumes of pH buffer 6.8 at regular intervals of 1,2,3,4,5,7.5 and 10 minutes. The collected samples were filtered through whatman filter and the concentration of the dissolved Domperidone HCl was determined at appropriate wavelength using the UV-Visible spectrophotometer.

RESULT AND DISCUSSION

FTIR and DSC Study

Compatibility studies were performed using FTIR spectro photo meter .The IR spectrum of pure drug and physical mixture of drug and polymer were studied by making a KBr disc .The characteristic peaks of Domperidone Hydrochloride were obtained at different wave numbers in different samples.

The spectra for all formulations are shown below

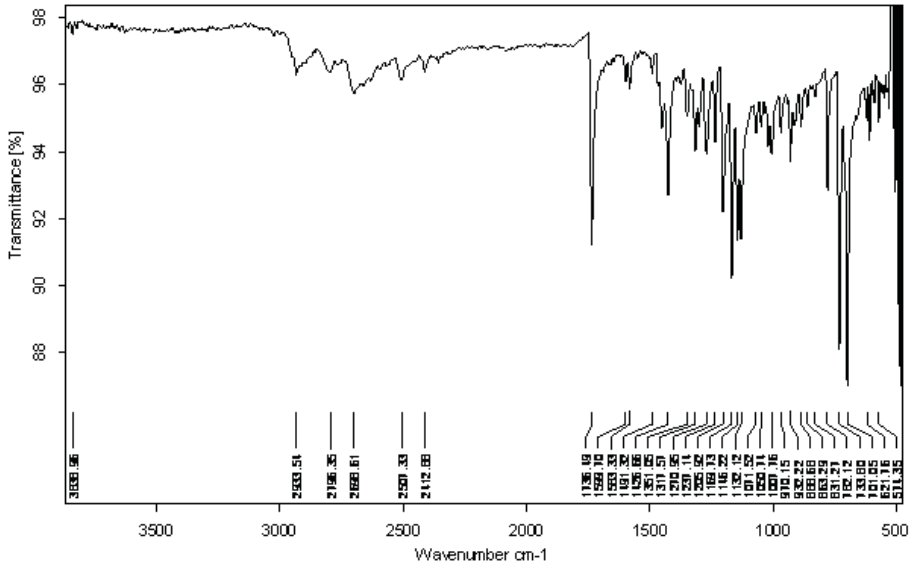


Figure: FTIR spectrum of pure Domperidone Hydrochloride

In the above spectrum the characteristic(principal) peaks of Domperidone hydrochloride are seen which are as follows.

Table: FTIR characteristic (principal) spectral details

Pure Domperidone Hydrochloride	Stretching
701,733	Mono substituted Benzene
1599	Aromatic Stretch
2412–2698	Second Arty Amine Salt
1736	C=O Stretch
1146-1169	C-O Stretch

FTIR spectra of Domperidone Hydrochloride+ HPMCE5 exhibitedpeaksat711cm^{-1}(Mono substituted Benzene),1593cm^{-1}presence of(Aromatic Stretch),2411-2681cm^{-1}(Secondary Amine Salt),1756cm^{-1}(C=O Stretch),1182-1201cm^{-1}(C-O Stretch).Here, all the principal peaks exhibited din range. FTIR spectra of Domperidone Hydrochloride+ HPMCE 15(Figure5.5) exhibited peaks at 699cm^{-1}(Mono substituted Benzene),1592cm^{-1} presence of(Aromatic Stretch), 2411-2588 cm $^{-1}$(Secondary Amine Salt), 1745cm $^{-1}$(C=O Stretch),1110-1210 cm^{-1}

All the characteristic peaks are present in the spectrum of drug-polymer mixture and the formulation. This indicates that the drug is compatible with the formulation components.

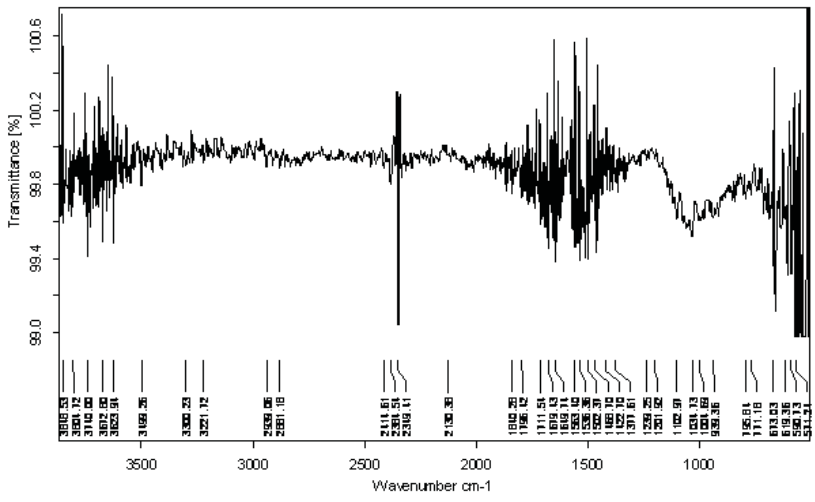


Figure5.4:FTIR Spectrum of Domperidone HCl+HPMCE5

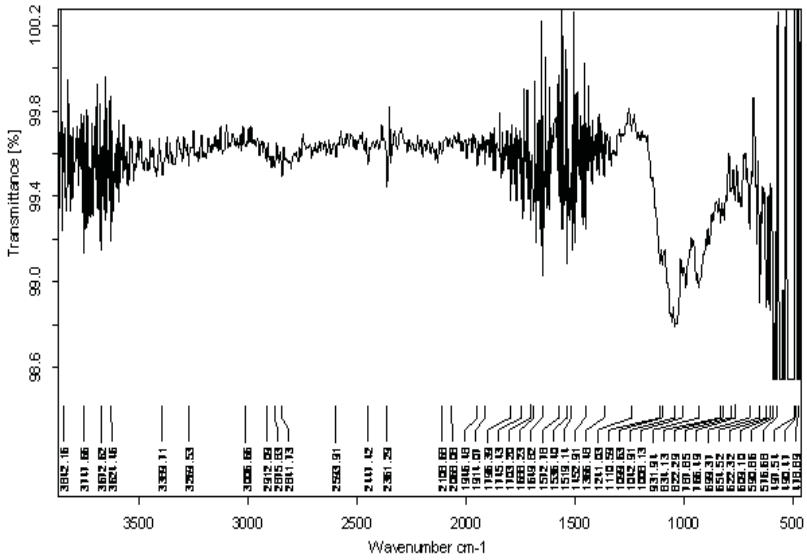


Figure5.5:FTIR spectrum of Domperidone HCl+HPMCE15

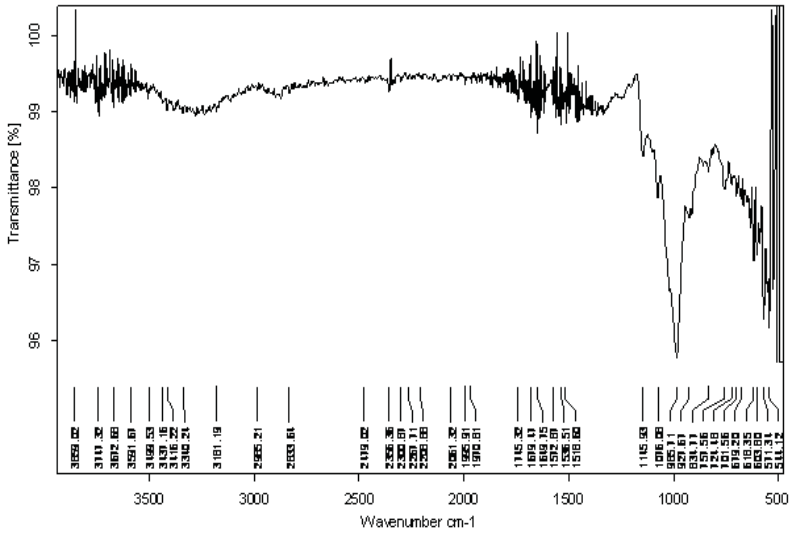


Figure5.6:FTIR Spectrum of Domperidone HCl+ Malt dextrin

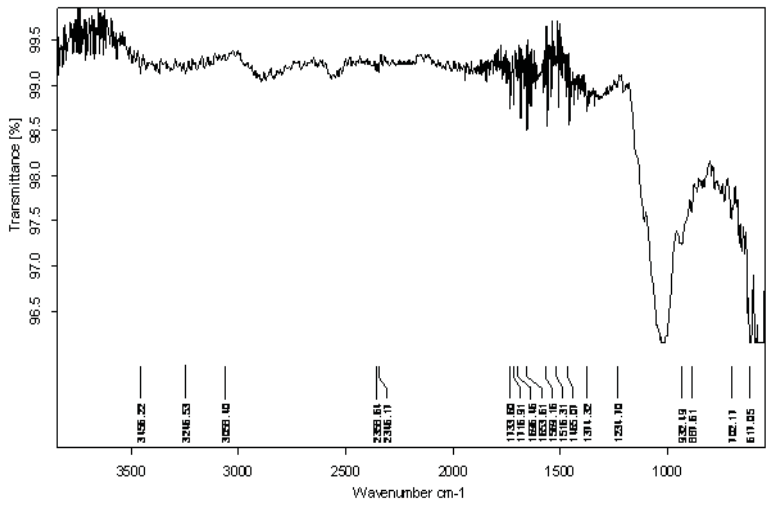


Figure: FTIR of Mouth Dissolving Film Formulation

Differential Scanning Calorimetric (DSC):

The DSC the monogram of Domperidone Hydrochloride exhibited an endothermic peak a t229.41^0 corresponding to it smelting point. The DSC thermo grams of Domperidone Hydrochloride with other exceptions doesn't show profound shift in peaks (229.41^{0}C) which in dictates compatibility. The DSC thermo gram of the individual drug and final formulation show in figure5.8and5.9

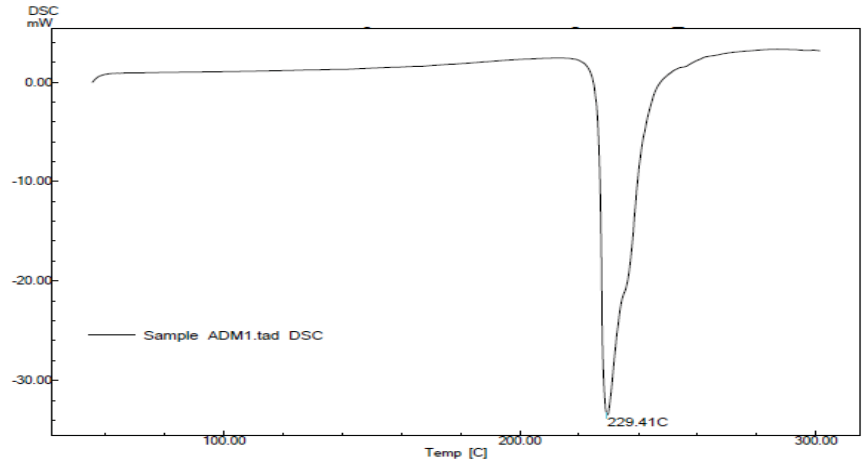


Figure5.8:DSCofpuredrug

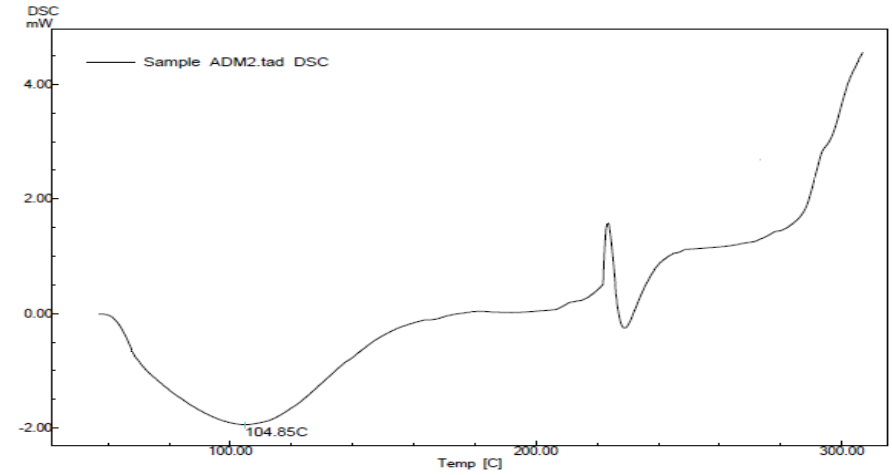


Figure5.9: DSC of formulation

Melting Point

Melting point is a simple and rapid method of estimation of purity of a substance. Small quantities of impurities may affect the melting point either by decreasing or increasing the melting range. Melting point of Domperidone HCl was found obey in the range of 226-230°C, which complied with the pharmacopeia limit syndicate the purity of drug sample.

Partition co-efficient

The partition co-efficient value was found to be in the range of1.9105±0.08.

Preliminary studies for selection of polymers

Preliminary studies were carried out to select suitable polymers and to decide ago odplasticizer, capable of producing films of desirable mechanical property and disintegration time. The film casting solution was prepared as per solvent casting method. The composition of various batches, amount of polymers used and their appearance and disintegration time are given in Table5.3.

Optimization of Polymer

The placebo films were prepared using Malt dextrin, HPMCE3, HPMCE5 and HPMCE15 as film forming agents in various amounts.

Table: Characteristics of Placebo Film Prepared Using Different Polymers

Batch	Polymer	Amount(mg)	Remarks	DisintegrationTime*(sec)
PB1	Maltodextrine	750	Insufficient	--
PB2		1000	Sticky	--
PB3		1250	Sticky	--
PB4		1500	Very Sticky	--
PB5	HPMCE3	500	Insufficient	--
PB6		750	Good	32±1.732
PB7		1000	Very Good	44.67±1.52
PB8	HPMCE5	500	Average	38.67±2.08
PB9		750	Very Good	42.67±0.57
PB10		1000	Good	51.67±2.08
PB11	HPMCE15	500	Very Good	36.67±1.52
PB12		750	Good	56.33±1.52
PB13		1000	Average	66±2.645

*Results are show nin mean ±S.D.(n=3)

The place bo films prepared using Mal to dextrin as a film former in various amounts of 750,1000,1250,1500mg were not having acceptable physical characteristics. Lowest amount of Mal to dextrin (PB1) when casted in the plastic petridish having area of 70cm^2 wasin sufficient of making the film.In other batches of Malto dextrin (PB2toPB4), amounts were sufficient of making the film, the film formed was stickyin nature. So, Malto dextrinal one was not selecte das the film forming polymer. HPMC are the hydro philic polymers which are suitable for the mouth dis solving film.Various

grades of HPMC were ableto make the film swhich were very transparent and having very good mechanical properties. The place bofilm of different grades of HPMCE3, HPMCE5 and HPMCE 15 were prepared to verify its film forming capacity and suitability for mouth disolving film. From all the HPMC batches, PB7 for HPMCE3, PB9 for HPMCE 5 and PB 11 for HPMCE 15 were easily removed from Petridis and having good acceptable physical characteristics and low disintegration time in accordance too the batches.

Experimental Design

Simplex Centriod design is a mixture design, often been applied to optimize the formulation variable switch basic requirement of understanding interaction of independent variables. Preliminary investigations of the process parameters revealed that factors like amount of HPMC E5(X1),amount of HPMC E15(X2) and amount of Malt odextr in (X3) showed significant in flounce on amount of drug dissolvein2min(CPRQ2;R1),disintegration time (R2) and tensile strength (R3) of the drug added fast dissolving film. Hence, they were utilized for further studies. For all 7 batches, all three of the selected dependent variables (X1,X2 and X3) showed a wide variation in disintegration time, amount of drug release in 2min and tensile strength (Table5.6). The data clearly indicated strong influence of X1, X2 and X3 on selected responses (R1,R2and R3).The polynomial equations can be used to draw conclusions after Considering magnitude of coefficients and mathematical sign it conveys either positive or negative. Results for design batches and its ANOVA are shown below.

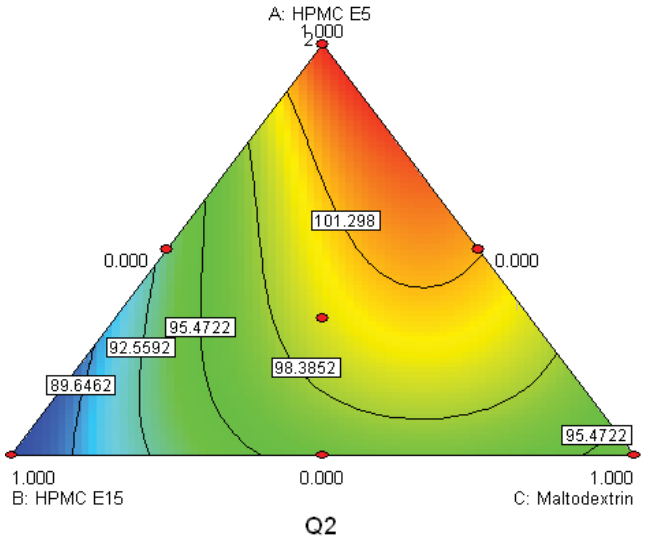
Table: Design Summary

Formulation Code	R1	R2	R3
	Q2 min*	Disintegration time(sec)*	Tensile strength(N/cm^2)*
F1	104.44±2.91	38±0.57	2.7±0.02
F2	97.08±2.89	78±1.15	3.43±0.06
F3	99.80±0.80	35±2.01	2.39±0.03
F4	98.12±1.62	52±2.64	3.1±0.07
F5	101.41±1.89	46±1.73	2.52±0.01
F6	98.86±3.18	63±2.31	2.94±0.04
F7	99.73±1.78	46±2.64	2.84±0.02
F1(R)	103.94±0.27	39±1.52	2.72±0.02

*Results are shown In mean ±S.D. (n=3)

R1:Response1, R2: Response2,R3 :Response3

Statistical analysis was carried out in Design Expert soft ware (7.1.5),which suggested that special cubic mode l(SCM) was followed for % drug release at 2minutes with P-value of 0.0385.this indicated that model was highly significant.



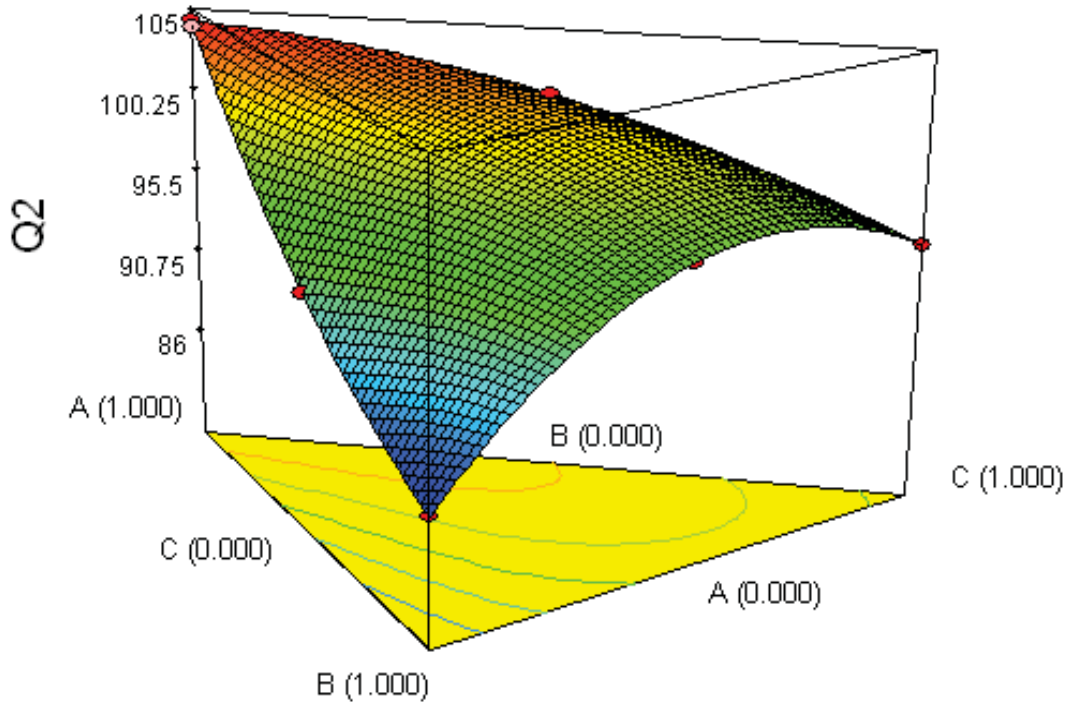


Figure5.10: Cont our plot and 3D Surface Plot of CPRQ2 (%) against amounts of HPMCE5,HPMCE15 and Mal to dextrin.

Polynomial equation

R1(CPRQ2)=+104.21*A+86.83*B+94.30*C

9.16*A*B+8.62*A*C+23.53*B*C+55.72*A*B*C

In order to find out contribution of each components and their interaction, Analysis of Variance (ANOVA) for SCM was carried out.

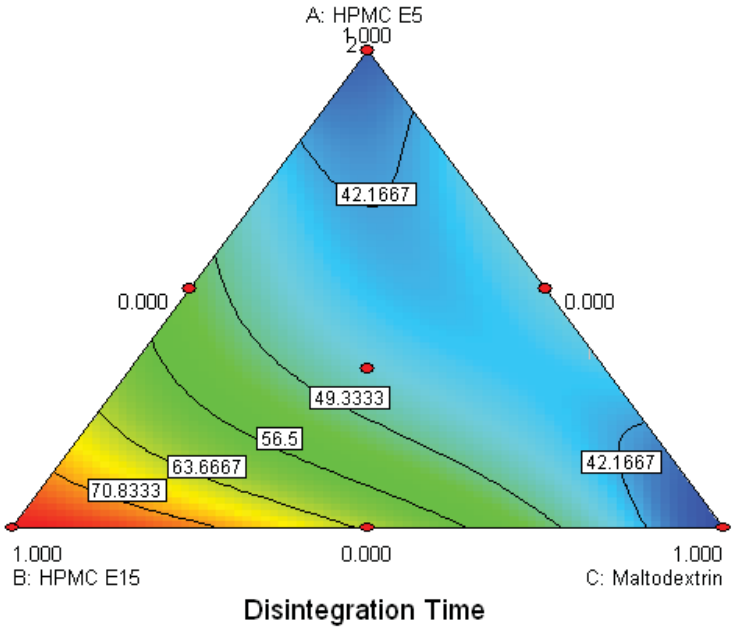
The ANOVA results (Table5.7), contour plot and 3D surface plot for the CPRQ2 (Figure5.15) showed the strong effect of the three factors (amounts of HPMCE5, HPMCE 15 and Mal to dextrin). Polynomial equation of Q2 indicates that the all the three polymer amount has positive effect on the Q2 .*In vitro* dissolution of the films was found to increase with increase in the amount of the polymer. It was observed that when the amounts of polymer were selected within the limits of the design ,*in vitro* dissolution rate increased to a greater extent with amount of HPMCE5 and increased to a lesser extent in case of Maltodextrin followed by HPMCE15. As per the equation, better release can be achieved with the combination of all the three polymers, rather than combining any two of them.

Response2: Disintegration Time (R2)

Table: ANOVA for special cubic model (Disintegration time)

Source	Sum of squares	DF	Meansq uare	Fvalue	Prob>F
Model	1477.38	6	246.23	492.46	0.0345
Linearmixt ure	1320.95	2	660.48	1320.95	0.0195
AB	28.41	1	28.41	56.82	0.0840
AC	62.23	1	62.23	124.45	0.0569
BC	28.17	1	28.17	56.33	0.0843
ABC	46.86	1	46.86	93.72	0.0655
Pureerror	0.50	1	0.50		
Cortotal	1477.88	7			

Statistical analys is was carried out in Design Experts of to are (7.1.5), which suggested that special cubic model (SCM) was followed for release at T2min with P-value of 0.0385.this indicated that model was highly significant.



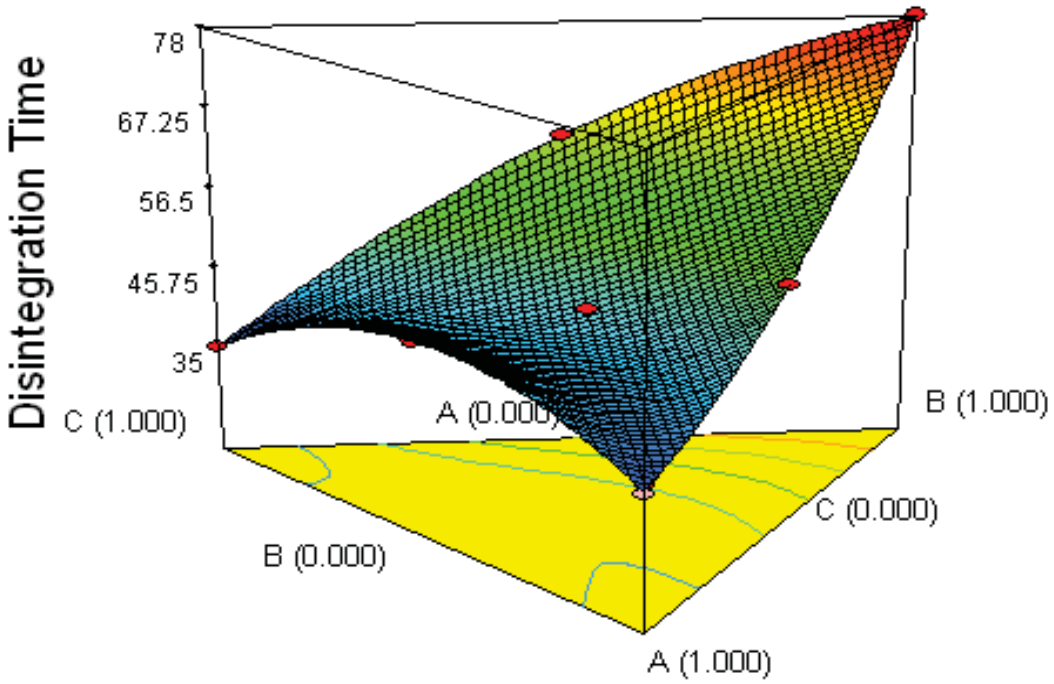


Figure5.11: Cont our plot and 3D Surface Plot of disintegration time (seconds) against amounts of HPMCE5, HPMCE 15 and Mal to dextrin.

Polynomial equation

R2 (Disintegration Time)=+38.50*A+ 78.00*B + 35.00*C - 25.00*A*B+37.00*A*C+26.00*B*C-235.50*A*B*C

In order to find out contribution of each components and their interaction, Analysis of Variance (ANOVA) for SCM was carried out.

The ANOVA results (Table5.8), contour plot and 3D surface plot for the disintegration time (Figure5.15) showed the strong effect of the three factors (amounts of HPMCE5, HPMCE 15 and Mal to dextrin).Polynomial equation of Disintegration time indicates that the all he three polymer amount has positive effect on the Disintegration time. *In vitro* disintegration time of the films was found to increase with increase in the amount of the polymer. It was observed that when the amounts of polymer were selected within the lim its of the design, in vitro dissolution ate was decreased the most when more amount of mal to dextrin was used in the formulation and it increase gradually with HPMCE5 followed by HPMCE15. As per the equation, shorter disintegration time can be achieved with the combination of all the three polymers, rather than the single polymer or with the combination of any two of them.

Response3: Tensile Strength (R3)

Table5.9:ANOVA for special cubic model (Tensile Strength)

S	**S**	**D**	**M**	**F**	**P**
Model	0.	6	0.	4	0
L i	0. 7	2	0. 3	1 3	0 .
AB	9	1	9	3.	0
AC	5	1	5	2.	0
BC	5	1	5	2.	0
ABC	1	1	1	0.	0
P	2	1	2		
C	0.	7			

Statistical analysis was carried out in Design Expert software (7.1.5), which suggested that special cubic model (SCM) was followed for release at T2min with P-value of 0.0385. this indicated that model was highly significant.

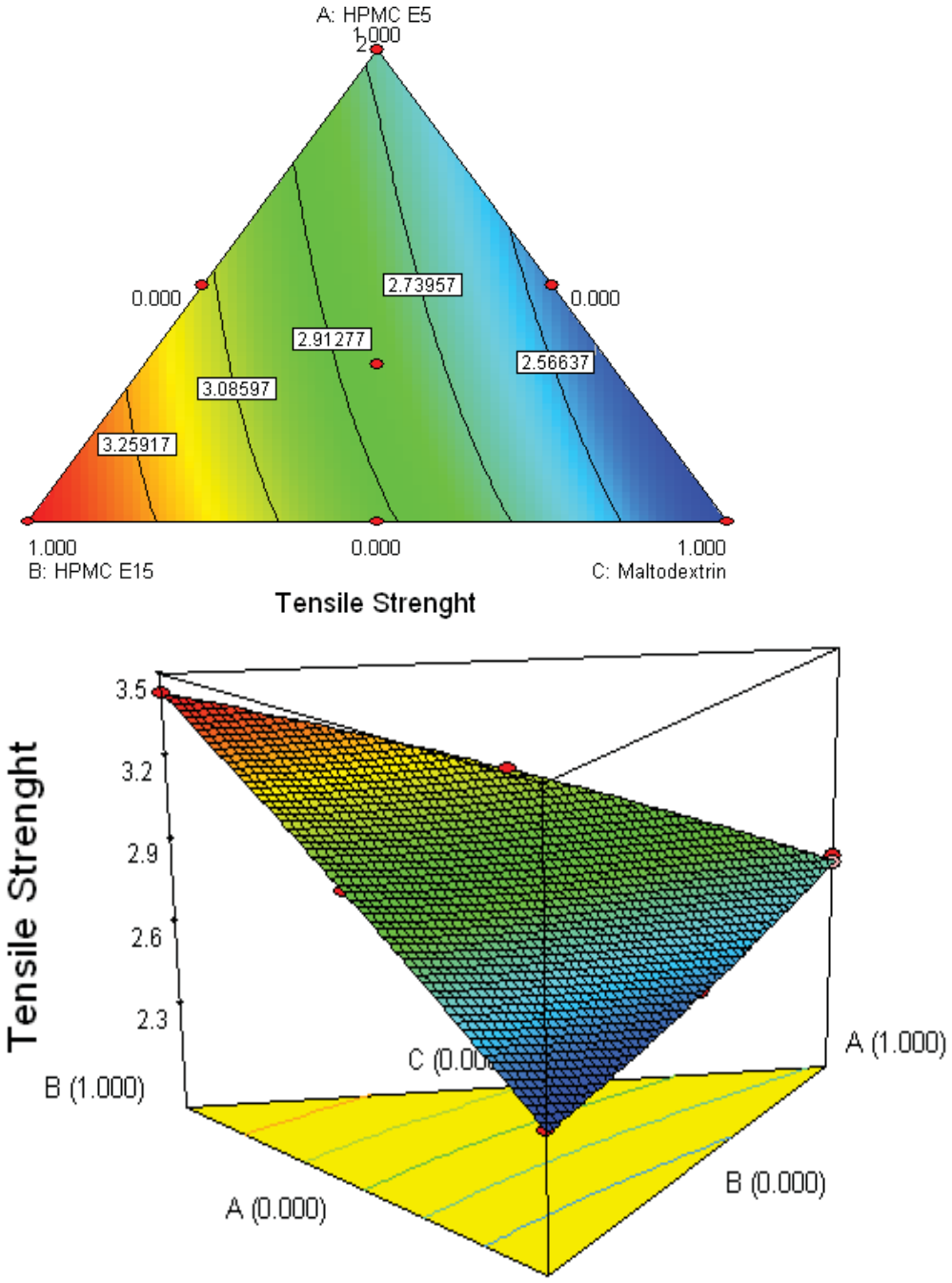


Figure 5.12: Cont our plot and 3D Surface Plot of Tensile strength (N/cm^2) against amounts of HP MCE5,H PMCE 15 and Mal to dextrin.

Polynomial equation

R3 (Tensile Strength) = +2.71*A + 3.43*B+2.39*C + 0.15*A*B-0.11*A*C +0.12*B*C-0.45*A*B*C

In order to find out contribution of each components and their interaction, Analysis of Variance (ANOVA) for SCM was carried out.

The ANOVA results (Table5.9), contour plot and 3D surface plot for the tensile strength (Figure5.15)showed the strong effect of the three factors(amounts of HPMCE5, HPMCE 15 and Mal to dextrin). Polynomial equation of Tensile strength indicates that the all the three polymer amount as positive effect on the Tensile strength. It was observed that when the amounts of polymer were selected within the limits of the design, tensile strength was increased when more amount of HPMCE 15 was used in the formulation and it increased to a less exerting in HPMCE5 followed by Mal to dextrin. As per the equation, values of tensile strength were decreased with the combination of all the three polymers.

5.5 Evaluation Parameters of film formulation

Weight variation test

The percentage weight variation for all the formulation is tabulated in Table5.10. All the films passed weight variation test as the % weight variation was wit in the pharmacopoeia limits of±7.5%.It was found to be in range of 37±2.081 to 81.67±2.081mg. Films having more amount of Mal to dextrin exhibited higher weight where as films having HPMCE5 were lighter in weight. The weight of all the films was uniform.

Thickness

The thicknesses of formulated films were found to be in range of 0.103±0.015 to 0.207±0.02mm.The mean values are tabulated in Table 5.10. The values are almost uniform in all formulations. Films containing Mal to dextrin resulted in increased thickness which was required for com for table handling of the film.

Folding Endurance

Folding endurance measures the ability of film to with stand rupture. The folding endurance of the films was determined by repeated l y folding a small strip of the films at the same place till it broke and the average folding endurance of all films was given in Table 5.10. Folding endurance of all the batch estranges from 101±2.645to177.67±3.51. Increase in concentration of polymer increases folding endurance.

Table5.10 : Evaluation parameters of experimental design batches

Bat	Weig	Thick	Folding	Drug content
F1	37	0.	1	9
F2	72	0.	1	9
F3	81	0.	1	9
F4	54	0.	1	9
F5	80	0	11	9
F6	76	0.	1	9
F7	62	0.	1	9
F	3	0	1	9

*All results are shown in mean ± S.D.(n=3)

Drug content

The drug content and content uniformity test was performed to ensure uniform and accurate distribution of drug. The content uniformity was per formed for all the nine formulations and results are tabulated in Table 5.10.Three trials from each formulation were analyzed on spectro photo meter. The mean value and standard deviation of all the formulations were calculated. The results indicated that in all the formulations the drug content was uniform. The cumulative percentage drug released by each film to the *in vitro* release studies was based on the mean content of the drug present in the respective film. The ranges of drug content in all the formulations were 95.218% to 98.00%.

***In vitro* dissolution study**

Inv itro release studies of Domperidone hydro chloride films were carried out in phosphate buffer (pH6.8). Cumulative drug release was calculated on the basis of drug content of Domperidone.

Drug dissolution was observed in F1, F5, which release 104.44% and 101.41% respectively, at end of 2min .Comparatively slow drug dissolution was observed in F6, F7 with release 96.45% and 99.73% respectively at end of 2min . This might be due to the higher viscosity of polymer, results in formation of strong matrix layer resulting in decreased in mobility of drug particles in swollen matrices, which leads to delay in drug release.

Table5.11: Cumulative percentage drug release from film formulations

Time(min)	0	1	2	3	4
F1	0.0±0.0	75.19±2.30	104.44±2.91	-	-
F2	0.0±0.0	73.34±1.04	86.83±1.00	89.64±3.40	97.08±2.89
F3	0.0±0.0	72.62±3.88	94.30±2.04	99.80±0.80	-
F4	0.0±0.0	78.60±2.98	93.23±2.02	98.12±1.62	-
F5	0.0±0.0	80.12±2.27	101.41±1.89	-	-
F6	0.0±0.0	81.40±2.53	96.45±2.81	98.86±3.18	-
F7	0.0±0.0	77.46±1.42	99.73±1.78	-	-
F1(R)	0.0±0.0	75.74±0.378	103.94±0.27	-	-

*All results are shown in mean ±S.D. (n=3)

The table 5.11 shows the data of the dissolution of the prepared design batches. The figure 5.13 shows the graph of cumulative percentage release versus time in minutes. The data shown shows the data up to two minutes only so that we can easily compare the dissolution and percentage drug release within our desired time limit. So, to get quicker release, lower viscosity grade polymers are desirable.

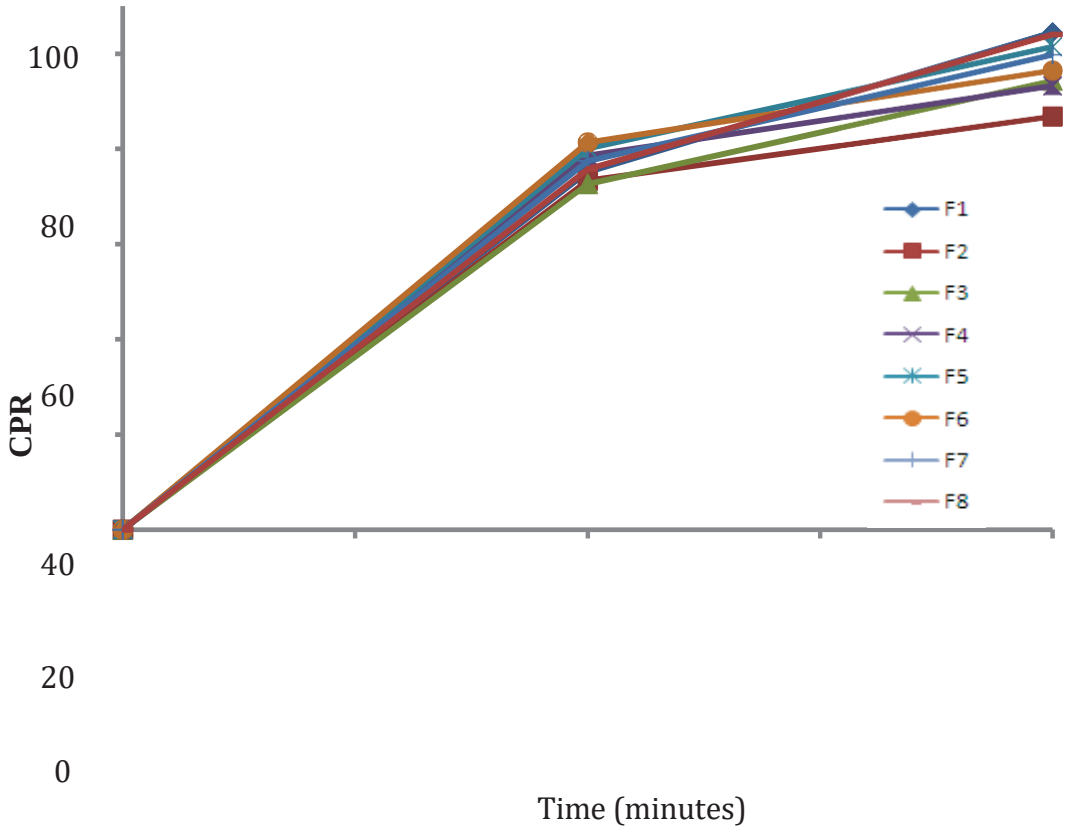


Figure5.13: *In vitro* release of Domperidone hydrochloride in phosphate buffer (pH6.8) from film formulation.

Table 5.12: Evaluation of Optimized Batch

Responses	Predicted	Experimental value*	Relative
Q2 min	99.01	98.45±0.99	-0.56
Disintegration Time(sec)	45.73	49±3	7.15
Tensilestrength (N/mm^2)	2.90	2.98±0.14	2.75

*All results are shown in mean ±S.D.(n=3)

Stability Studies

Stability study has been performed according to ICH guidelines for short period of time. The optimized formulations was evaluated for stability studies which was stored at 40^0C at 75%RH tested for 1 month and was analyzed for their tensile strength, disintegration time, *in vitro* drug release on intervals of 7, 15 and 30 days. Results of formulations were found to be within the permissible limits and the results are shown in the Table5.13. There was no significance difference seen in the Observable Parameters. So, the formulation was found to be stable for tested period.

Table5.13: Results of accelerated stability studies

Evaluation parameters	Time period for sampling*			
	Initial	After7days	After 15days	After30days
CPR at 2min (%)	98.45±0.99	98.06±5.44	98.15±4.78	98.42±2.3
Disintegration	49±3	47±1	48±0.57	49±0.57
Tensilestrength	2.98±0.14	2.95±0.081	3.01±0.07	2.99±0.14

*All results are shown in mean± S.D .(n=3)

CONCLUSION

The mouth dissolving film of Domperidone Hydrochloride obtained by the solvent casting method showed desired % drug release, disintegration time and tensile strength. The prepared film was having very smooth surface because of Maltodextrin and without any interactions between drug and polymer. The optimization of MDF was done by simplex centroid design. The multiple regression analysis of the results led to equations that describe adequately the influence of the selected variables on the responses understudy. Formulations with % drug release of more than 95 % within 2 minutes were found in a specific region containing having more amount of HPMCE5 resulting in quicker drug release. Formulations within-vitro disintegration time<60 sec were found in a specific region containing high levels HPMCE5 and Maltodextrin and low levels of HPMCE15. A desired level of Tensile strength was achieved when optimum amount of HPMCE15 was present in the film. The high % drug release of the film in simulated saliva (pHbuffer6.8) indicated that it could be helpful for the treatment of acute Attention deficit hyperactivity disorder and Narcolepsy where quick bioavailability of the drug is desired.

So, all the designed batches were prepared and their evaluations were carried out which shown acceptable results. On the bases of the results, we may conclude that project aim was fulfilled successfully.

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How to cite this article:

Mansoori S, Patel M K, Chatterjee D P. Formulation and characterization of oral thin film containing Domperidone HCl. ***Panacea Journal of Pharmacy and Pharm. Sci. 2017:6(2); 121-144***