3.3: Research Publications and Awards

3.3.1: Number of research papers published per teacher in the Journals notified on UGC care list during the last five years

3.3.1.2: Number of research papers in the Journals notified on UGC CARE list year wise during the last five years

2023 - 24	2022 - 23	2021 - 22	2020 - 21	2019 - 20
16	08	02	06	14

UGC Care: 46

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per Publication details of faculty for academic year 2019-20

Sr. no.	Title of paper	Authors	Journal Name	Vol/Issue/Page no./ Month & year	Hyperlink
1.	Formulation Optimization and Evaluation of Immediate Release Tablet of Telmisartan	**Sonali Jaiswal *** Dr. S. D. Barhate	Asian Journal of Research in Pharmaceutical Sciences	Vol.03/ Issue 03/167-173/July-September 2019	https://ajpsonline.com/HTML_Papers/Asian%20Journal%20of%20Research%20in%20Parmaceutical%2h0Sciences__PID__2019-9-3-4.html
2.	Formulation and Evaluation of Colon Targeted Sulfasalazine Microspheres	**Diksha Saitwal*** Dr. Surajj Sarode	Journal of Scientific Research in Pharmacy	Vol. 2/ Issue 01/ 75-84/ July-2019	
3.	Separation of Dyes by Mixed Hydrotropic Thin Layer Chromatography	**P. A. Salunke***,	Asian Journal of Pharmaceutical Analysis:	9(3)/151-155/ July - September, 2019	https://ajpaonline.com/AbstractView.aspx?PID=2019-9-3-8
4.	Mouth Dissolving Film – Past, Present and Future	**Aditi D. Baviskar*** Mr. M. M. Bari	The Pharma Review	63-66 July-August 2019	
5.	Formulation Optimization and Evaluation of Mouth	**Aditi D. Baviskar***	Asian Journal of Pharmaceutical	Vol 12/Issue 9/ 154-163/2019	

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	Dissolving Film of Aprepitant	Mr. M. M. Bari	and Clinical Research		
6.	Formulation Optimization and Evaluation of Orodispersible Tablet of Masked Fexofenadine hydrochloride	**Ankita R. Koshti***, Mr. M. M. Bari	Asian Journal of Pharmacy and Technology	9(3)/21 2-219/ July-September, 2019	https://ajptonline.com/AbstractView.aspx?PID=2019-9-3-12
7.	Formulation Optimization and Evaluation of Transdermal Patch of Losartan Pottassium Containing DMSO as Permeation Enhanser	**Sachin B. Jadhav*** Mr. M. M. Bari	Asian Journal of Pharmacy and Technology.	9(3)/220-227/July-September, 2019	https://ajptonline.com/AbstractView.aspx?PID=2019-9-3-13
8.	Extended release Pellets of Diclofenac Sodium, Preparation, Characterization and Drug Release Study	**M.M.Bari,** Rahul S. Tade	Inventi Rapid, NDDS	Vol.2020/Issue 1/1-05	
9.	Tazarotene, commonly marketed as Tazorac, Avage, and Zorac is member of the acetylenic class of Retinoids: A Review	**Mr. Mayur S. Jain***	Asian Journal o Pharmaceutical Research	Vol. 9/Issue 3/206-208/2019	https://asianjpr.com/AbstractView.aspx?PID=2019-9-3-13
10.	Review on Perflutren, A Diagnostic Drug that is intended to be used for contrast enhancement during the indicated Echocardiographic procedures	**Mr. Mayur S. Jain***	Asian Journal of Pharmaceutical Research.	Vol. 9/ Issue 3/190-192/2019	https://asianjpr.com/AbstractView.aspx?PID=2019-9-3-9
11.	Tigecycline is The First Clinically Available Drug in	**Mr. Mayur S. Jain***	Asian Journal of Pharmacy	Vol.10/Issue-01/ 48-50/January-	https://ajptonline.com/AbstractVi

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	a New Class of Antibiotics Called The Glycylcyclines: A Review		and Technology	March-2020	ew.aspx?PID=2020-10-1-10
12.	Samarium Sm 153 Lexidronam Is a Radioactive Medication Used to Treat Pain Caused by Cancer: A Review	**Mr. Mayur S. Jain***	Asian Journal of Pharmacy and Technology	Vol.10/Issue-01/January-March-2020	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpr&volume=10&issue=1&article=010
13.	Development and Validation of UV Spectrophotometric Method for Simultaneous equation of Aspirin and Omeprazole in Tablet Dosage Form	**Sandip Chaudhari***	Pharma Anal Acta,	Vol.11/ Issue 1/ No. 618/Feb.2020	https://journals.indexcopernicus.com/search/article?articleId=2516818
14.	Development and Validation of UV Spectrometric methods for simultaneous estimation of Rosuvastatin and Telmisartan in pure and tablet dosage form	**S.S. Patil***	Communicated with Journal of Pharmascitech		

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Paper Publication details of faculty for academic year 2020-21

Sr. no.	Title of paper	Authors	Journal Name	Vol/Issue/Page no./ Month & year	Hyperlink
1	A Review On: Fine Needle Aspiration Cytology in Diagnosis of Breast Lumps	**Neha Patil***	Pharma Times	Vol. 52/Issue 09/24-29/September 2020	
2	Environment Safe Method Development and Validation of Dolutegravir in Bulk and Tablet Dosage Form by UV-Visible Spectroscopy.	**Mrs. P.A. Borse Salunke***	Asian Journal of Pharmaceutical Analysis	Vol. 11/ Issue-02/ April-June 2021	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpa&volume=11&issue=2&article=014
3	Formulation Optimization and Evaluation of Taste-Masked Chewable Tablet of Fexofenadine Hydrochloride	**R.G. Jadhav,** Mr. M. M. Bari	Inventi Rapid, NDDS	Vol.2021/Issue 1/1-11	
4	Corona viruses are a family of viruses that range from the common cold to MERS corona virus: A Review	**Mr.Mayur S. Jain**	Asian Journal of Research in Pharmaceutical Sciences Home page www. ajpsonline.com	Vol. 10 |Issue-03| July-September | 2020. 1 to 7	https://ajpsonline.com/AbstractView.aspx?PID=2020-10-3-16
5	Bimatoprost, also known as Latisse or Lumigan, belongs to a group of drugs called	**Mr.Mayur S. Jain***	Asian Journal of Pharmacy and Technology Home page	Vol. 10 |Issue-03|	https://ajptonline.com/AbstractView.aspx?PID=2020-10-3-

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	prostamides: A Review		www.ajptonline.com	July - September | 2020 179-182	9
6	Favipiravin has been investigated for the treatment of life-threatening pathogens such as Ebola virus, Lassa virus and now COVID-19: A review	**Mr.Mayur S. Jain***	Asian Journal of Research in Pharmaceutical Research Home page www Asianjpr.com	Vol. 11 |Issue-01| January-March | 2021	https://asianjpr.com/AbstractView.aspx?PID=2021-11-1-8

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Paper Publication details of faculty for academic year 2021-22

Sr. no.	Title of paper	Authors	Journal Name	Vol/Issue/Page no./ Month & year
1	Formulation Optimization and Evaluation of Push Pull Osmotic Pump Tablet of Vildagliptin	**Ashwini V. Patil**, Mr. M. M. Bari	Asian Journal of Pharmacy and Technology	Vol. 12 Issue 02 Year: 2022
2	Formulation and Evaluation of Sustained release suspension of Ibuprofen as a Model Drug.	**Bari M.M.***, Ashwini V. Patil	Research Journal of Pharmaceutical Dosage forms and Technology.	Vol. 14/ Issue-02/ 2022

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Paper Publication details of faculty for academic year 2022-23

Sr. no.	Title of paper	Authors	Journal Name	Vol/Issue/Page no./ Month & year	Hyperlink
1	Formulation Optimization and Evaluation of Push Pull Osmotic Pump Tablet of Vildagliptin	**Bari M.M.***	Asian Journal of Pharmacy and Technology	Vol. 12/Issue 02/Year: 2022	https://ajptonline.com/AbstractView.aspx?PID=2022-12-3-3
2	Formulation Optimization and Evaluation of Novel Orodispersible tablet of Bilastine.	**Bari M.M.***, Harshada P. Dhande	Asian Journal of Pharmacy and Technology	Vol. 13/ Issue-04/ 2023	
3	Water Soluble Method Development and Validation of Cyclobenzaprine Hydrochloride and Aceclofenac in Bulk and Tablet Dosage form By UV-Visible Spectroscopy.	**Poonam A. Borse**	International Journal of Research Thoughts (IJCRT) An International Open Access, Peer-reviewed referred Journal UGC Approved no. 49023(18) Google scholar impact factor- 7.97 ISSN No. 2320-2882	Vol.10/ Issue 7/July 2022	https://ijcrt.org/papers/IJCRT2207064.pdf
4	Mobocertinib is an Oral Kinase inhibitor targeted against EGFR and used in the	**Mr. Mayur S.Jain***	Asian Journal of Pharmaceutical Research (AJPRes.) ISSN 2231-	Vol.12/ Issue 02/June 2022	https://asianjpr.com/AbstractView.aspx?PID=

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	treatment of Non-small cell Lung cancer: A review		5683(Print), 2231-5691(Online)		2022-12-2-12
5	Phosphodiesterase 5 inhibitors: A review on Analytical Methods	**Mr. Mayur S.Jain***	International Journal of Research Throughts(IJCRT) An International Open Access, Peer-reviewed referred Journal UGC Approved no. 49023(18) Google scholar impact factor- 7.97 ISSN no. 2320-2882	Vol.10/ Issue 11/November 2022	https://ijcrt.org/papers/IJCRT2211430.pdf
6.	Bempedoic acid a novel drug used for the treatment of Hyperlipidemia: A review	**Rahul D. Shimpi***	Asian Journal of Pharmaceutical Research (AJPRes.) ISSN 2231-5683(Print) 2231-5691(Online)	Vol.13/ Issue 01/January-March 2023	https://asianjpr.com/AbstractView.aspx?PID=2023-13-1-13
7	Emulgel: A Novel Topical Drug Delivery System for Hydrophobic drug	**Ms. S. B. Rathod**	International Journal of Current Science (IJCSPUB) An International Open Access, Peer-Reviewed Referred Journal ISSN 2250-1770	Vol.12/ Issue 03/August 2022	https://rjpn.org/ijcspub/papers/IJCSP22C1193.pdf

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			Google scholar impact factor- 8.17		
8	Basic Test for Drugs used in formulation of multipurpose cream	**Junaid S. Shaikh***	World Journal of Pharmaceutical Research, ISSN no. 2277-7105	Vol.12/ Issue 09/ May 2023	https://www.wjpr.net/abstract_show/22197

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2023 – 24

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Paper Publication details of faculty for academic year 2023-24

Sr. no.	Title of paper	Authors	Journal Name	Vol/Issue/Page no./ Month & year	Hyperlink
1.	Formulation and Evaluation of Capsule in capsule Technology for Biphasic delivery of Glipizide	**Rathod Rupali,** Mr. M. M. Bari	Research Journal of Pharmaceutical Dosage forms and Technology	Vol, 16/ Issue-01, Jan-Mar. 2024 Page no. 27 to 34	https://rjpdft.com/AbstractView.aspx?PID=2024-16-1-5
2	Formulation and Evalution of Ketofrofen Emulgel for Topical Drug Delivery System	**Mr. Junaid Shaikh**	Asian Journal of Pharmacy and Technology	Vol. 14/ Issue 01/ January - March/ 2024	https://ajptonline.com/AbstractView.aspx?PID=2024-14-1-3#:~:text=The%20formulations%20were%20evaluated%20for,anti%2Dinflammatory%20and%20analgesic%20activity.
3	Formulation Optimization and Evaluation of Novel Oro-dispersible Tablet of Bilastine	**Shaikh Samir,** Mr. M. M. Bari	Asian Journal of Pharmacy and Technology	Vol.13 Issue 03 July- Sept 2023	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpt&volume=13&issue=3&article=001
4	Pharmacovigilance: A Comprehensive Review	**Ms. Swati Rathod**	International Journal of Research Thoughts (IJCRT) UGC Approved no.	Vol.11, Issue-10, Oct./2023	https://www.ijcrt.org/papers/IJCRT2310321.pdf

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			49023(18) Google scholar impact factor- 7.97 ISSN No. 2320-2882		
5	Formulation and Evaluation of Bilayer Floating Tablet	**Dr. Shashikant D. Barhate**	Journal of Advanced Zoology	Vol. 44, Issue 04 2023	https://jazindia.com/index.php/jaz/article/view/3636
6	Phosphodiesterase 5 inhibitors: A review on Analytical Methods	**Mr. Mayur S.Jain***	International Journal of Research Throughts(IJCRT) UGC Approved no. 49023(18) Google scholar impact factor- 7.97 ISSN no. 2320-2882	Vol.10/ Issue 11/November 2022	https://ijcrt.org/papers/IJCRT2211430.pdf
7	Bempedoic acid a novel drug used for the treatment of Hyperlipidemia: A review	**Mr. Rahul D. Shimpi***	Asian Journal of Pharmaceutical Research (AJPRes.) ISSN 2231-5683(Print) 2231-5691(Online)	Vol.13/ Issue 01/January-March 2023	https://asianjpr.com/AbstractView.aspx?PID=2023-13-1-13
8	Formulation, Design and Characterization of Matrix Tablets.	**Dr. Shashikant D. Barhate**,	Journal of Advanced Zoology,	Vol. 44, Issue-05, 2023	https://jazindia.com/index.php/jaz/article/view/3586

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9	A Review on Hydrogel as A Novel Carrier	**Ms. Swati Rathod**	International Journal of Creative Research Thoughts (IJCRT), an international / Open Access, Peer-reviewed, Refereed Journal	Vol. 12, / Issue01/ January 2024 ISSN 2320-2882	https://ijcrt.org/papers/IJCRT2401032.pdf
10	Oro- dispersible Tablet: A Comprehensive Review	**Shaikh Samir**	International Journal of Creative Research Thoughts (IJCRT), an international / Open Access, Peer-reviewed, Refereed Journal	Vol. 12, / Issue 01/ January 2024 ISSN 2320-2882	https://ijcrt.org/papers/IJCRT2401453.pdf
11	Preparation and Evaluation of Rectal Bilayer Suppository of Lidocain and Aceclofenac for Proctology	**Chaitali K. Gunjal,** Mr. M. M. Bari	International Journal of Creative Research Thoughts (IJCRT), an international / Open Access, Peer-reviewed, Refereed Journal	Vol. 12, / Issue 01/ January 2024 ISSN 2320-2882	https://ijcrt.org/papers/IJCRT2401454.pdf
12	Formulation and Evaluation of Extended Release Oral Suspension of Metformin Hydrochloride	**Dipali Patil** Mr. M. M. Bari	Research Journal of Pharmaceutical Dosage Forms and Technology	Vol. 16, / Issue 01/ January 2024 ISSN 0975-4377	https://rjpdft.com/AbstractView.aspx?PID=2024-16-1-2#:~:text=The%20research%20scheme%20of%20formulation,swallowing%20in%20patients%20with%20diabetes

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13	Formulation and Evaluation of Capsule-in-Capsule Technology for Biphasic delivery of Glipizide	**Rupali Rathod** Mr. M. M. Bari	Research Journal of Pharmaceutical Dosage Forms and Technology	Vol. 16, / Issue 01/ January 2024 ISSN 0975-4377	https://rjpdft.com/AbstractView.aspx?PID=2024-16-1-5
14	Formulation Development and Evaluation of Sustained Release Rectal Suppository of Domperidone Maleate	**Chaitali K. Gunjal,** Dr. S. D. Barhate	Research Journal of Pharmaceutical Dosage Forms and Technology	Vol. 16, / Issue 01/ January 2024 ISSN 0975-4377	https://rjpdft.com/AbstractView.aspx?PID=2024-16-1-3
15	Formulation Development and Evaluation of Floating Beads of Propranolol Hydrochloride	**Madhuri Pardeshi,** Dr. S. D. Barhate	Research Journal of Pharmaceutical Dosage Forms and Technology	Vol. 16, / Issue 02/ June 2024 ISSN 0975-4377	https://rjpdft.com/HTMLPaper.aspx?Journal=Research%20Journal%20of%20Pharmaceutical%20Dosage%20Forms%20and%20Technology;PID=2019-11-3-5
16	Formulation and Assessment of Polyherbal Candy in the treatment of cough and sore throat	**Junaid Shaikh**	Asian Journal of Pharmacy and Technology	Vol. 14, / Issue 02/ June 2024 ISSN 2231-5713	https://ajptonline.com/AbstractView.aspx?PID=2024-14-2-3

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2231-5675 (Online)
DOI: 10.5958/2231-5675.2019.00027.9

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Asian Journal of Pharmaceutical Analysis
Home page *www. ajpaonline.com*

RESEARCH ARTICLE

Separation of Dyes by Mixed Hydrotropic Thin Layer Chromatography

P. A. Salunke*, Dr. S. D. Barhate, B. R. Chavhan, S. S. Patil. R. S. Wagh, S. B. Rathod
Shree Sureshdada Jain Institute of Pharmaceutical Education and Research, Jamner, Dist: Jalgaon
*Corresponding Author E-mail: **salunkepoonam@rediffmail.com**

ABSTRACT:
Now a days, aqueous solubility of drugs is major problem in pharmaceutical field. Generally for solubilization of drugs organic solvents generally prefer. But these solvents are toxic in nature, high cost, flammable and acts as pollutants. Organic solvents are not environment safe. Hydrotropic method is used to enhance water solubility of poorly water soluble drug by using various hydrotropes instead of organic solvents. As a Model sample Bromocresol green and phenol red was selected. To increase water solubility of poorly water soluble dyes, single and mixed hydrotropic method was selected. Both dyes soluble in optimized single hydrotropic solution like as 20% niacinamide, 25% niacinamide, 10% sodium benzoate and mixed hydrotropic solution like 10% Sodium citrate and 10% urea. For separation of both dyes from mixture Thin layer chromatography have been used. Silica gel G used as stationary phase on glass slide and hydrotropic solution used as a mobile phase in which sample was completely soluble. When single hydrotropic solution used as a mobile phase, separation of dyes was not obtained from mixture. Mixed hydrotropic solution of 10% sodium citrate and 10% urea used as mobile phase gives better result. Rf value of Bromocresol green and phenol red in mixed hydrotropic solution was found to be 0.51 and 0.82 respectively.

KEYWORDS: Bromocresol green, Phenol red, Thin layer chromatography, Hydrotropy, solubility, Rf value.

INTRODUCTION:

Hydrotropy term originated by Scientist Neuberg describes the enhancement of solubility of solute by the addition of high concentration of alkali metal salts of various organic acids. The term has been used in literature to designate non-micelle-forming substances, either liquid or solids, organic or inorganic, capable of solubilizing insoluble compounds[1]. In hydrotropic solubilization process involves intermolecular interaction with several balancing molecular forces. Hydrotropic agents have been used to enhance aqueous solubility of poorly water soluble drugs [2,3,4]

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Bromocresol green is a triarylmethane dye. It is used as a pH indicator in application of growth mediums for microorganisms and titrations. In clinical practice it is used to measure serum albumin concentration in mammalian blood samples [5].

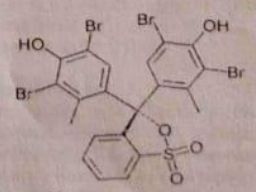

Figure 1: Structure of Bromocresol green

Phenol red is a pH indicator also known as phenolsu phonphthalein. It used in cell biology laborator es [6].

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RESEARCH ARTICLE

Formulation optimization and Evaluation of Orodispersible Tablet of taste masked Fexofenadine hydrochloride

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ABSTRACT:
The purpose of the study was to mask the bitter taste of fexofenadine HCl by using pH sensitive polymer. Eudragit E100. The taste masking of fexofenadine HCl was achieved by preparing taste masked granules using Eudragit E100 by wet granulation method. These granules were then formulated into ODTs using superdisintegrant addition technique. Central composite design was applied as an optimization technique. FTIR and DSC studies indicated drug and excipients were compatible with each other. The prepared ODTs were evaluated for precompression and post compression parameters. The optimized batch FFH3 were passes all the precompression and post compression parameters and it was given as best by the CCD. The disintegration time and % drug released was found to be 23 seconds and 99.40% within 30 min respectively. As Eudragit E100 is soluble at pH below 5. 0.001N HCl stimulating the gastric fluid was chosen as the dissolution medium. It was concluded that ODTs of fexofenadine HCl were successfully prepared by taste masking method using pH sensitive polymer Eudragit E100 and croscarmellose sodium as superdisintegrant using central composite design. As per CDER guideline it shows disintegration time within 5-30 seconds.

KEYWORDS: Fexofenadine HCl, pH sensitive polymer Eudragit E100, Croscarmellose Sodium, ODT, CDER, Central composite design.

INTRODUCTION[1,2,3,4]:

Fexofenadine HCl is biopharmaceutical classification system type II drug as it possesses low solubility and high permeability. It is indicated for the relief of symptoms associated with seasonal allergic rhinitis in adults and children 2 years of age and older and for treatment of uncomplicated skin manifestations of chronic idiopathic urticaria in adults and children 6 months of age and older. Fexofenadine HCl shows poor bioavailability thus a strategy to improve bioavailability should aim its aqueous solubility.

Innovative drug delivery systems known as orodispersible tablet or fast dissolving tablets are novel type of tablet that disintegrate/disperses in saliva. Advantage of ODT allowing administration without water anywhere anytime, leads to their suitability for drugs that undergo extensive first pass metabolism. The benefits in terms of patient compliance, rapid onset of action as the drug directly goes into systemic circulation and good stability, makes these tablets popular dosage form of choice in the current market.

United States Food and Drug Administration (USFDA) defined Orodispersible tablet as "A solid dosage form containing medicinal substances which disintegrates rapidly, usually within a matter of seconds, when placed upon the tongue".

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RESEARCH ARTICLE

Formulation optimization and Evaluation of Transdermal patch of losartan potassium containing DMSO as permeation enhancer

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ABSTRACT:
The present investigation focused on the formulation optimization and evaluation of transdermal patch of losartan potassium containing DMSO as permeation enhancer. Transdermal patches were prepared by solvent evaporation method by taking different ratios of polymers such as HPMC K100M and Eudragit RS 100, along with the DMSO as permeation enhancer and PEG-400 as plasticizer. Two factor three levels central composite design applied to optimize the formulation variables. In this study, amount of HPMC K100 M (X1) and amount of Eudragit RS 100 (X2) were selected as independent variables. The percentage losartan potassium permeated at 3 hrs (Y1), percentage losartan potassium permeated at 6 hrs (Y2) and permeation flux (Y3) were selected as dependent variables. The FTIR studies confirmed that there is no interaction between losartan potassium and the polymers. Nine formulations were formulated according to design. The prepared formulations were evaluated for various physical and chemical parameters. In-vitro drug permeation study was carried out for 6 hrs. The formulation OLP-4 was given as best batch by the design expert software. The formulation OLP-4 showed the 34.47 % permeation in 6 hrs and permeation flux435.74 µg/cm^2/hr. The best fit model for optimized batch OLP-4 is zero order model with highest r^2 value of (r^2 = 0.9641) and the mechanism of release was fickian diffusion mediated. Statistical optimization proved to be very useful in the subsequent formulation development work following preliminary evaluations. Thus, the design of experiment with response surface method is an efficient tool to determine and optimize formulation conditions within experimental conditions.

KEYWORDS: Losartan potassium, HPMC K100M, Eudragit RS 100, Transdermal patch, Controlled release, Central composite design.

INTRODUCTION[1,2,3,4,5,6,7]:

Controlled Drug Delivery System:
Controlled release system refers to use of delivery device with the objective of releasing the drug into patient's body at a predermined rate, or at specific times or with specific release profiles. The term controlled release has a meaning that goes beyond the scope of sustained release. It also implies a predictability and reproducibility in the drug release kinetics, which means that the release of drug ingredients from a controlled drug delivery system proceeds at a rate profile that is not only predictable kinetically, but also reproducible from one unit to another.

Transdermal Drug Delivery System:
The system of drug delivery that employs a skin portal to the systemic circulation at a predetermined rate and maintains clinically effective concentrations over a prolonged period of times is known as a transdermal drug delivery system (TDDS)

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Research Article

FORMULATION AND EVALUATION OF COLON TARGETED SULFASALAZINE MICROSPHERES

Diksha Saitwal *, Dr Surajj Sarode, Dr. S.D. Barhate
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Received on: 24-05-2019; Revised and Accepted on: 09-07-2019

ABSTRACT

Sulfasalazine is an anti-inflammatory drug used in the treatment of ulcerative colitis. It is metabolised in colon by the bacterial enzyme azoreductase to sulfapyridine and 5-amino salicylic acid. It is rapidly absorbed in the intestine, hence it is necessary to develop colon targeted drug delivery system. Sulfasalazine releases 5-ASA which decreases the inflammation of intestine & thus helpful in ulcerative colitis. The main objective of the present research is formulated and evaluated colon targeted sulfasalazine microspheres by emulsion solvent evaporation method by using 2-factor central composite design. Optimized formulation S2 showed highest drug release (92.36%) at the end of 12 hours, maximum entrapment efficiency (91.27%) and particle size was in acceptable range (64.1 to 74.5 µm) at medium level of concentration of eudragit s 100 (1000mg) and concentration of span 80 (1%). FT-IR and DSC study indicates that drug is compatible with excipients and there is no interaction between them. The release kinetics of optimized formulation shows first order release followed by non-fickian diffusion.

KEYWORDS: *Emulsion solvent evaporation method, Sulfasalazine, Microspheres, Eudragit S100 and Span 80.*

INTRODUCTION

Pharmaceutical invention and research are increasingly focusing on delivery system which enhances desirable therapeutic objectives while minimising side effects. The last two decades, there has been a remarkable improvement in the field of novel drug delivery system. Nowadays, a new approach has been made of delivering a drug directly into the colon without exposure in the upper GI tract. These are known as colon targeted drug delivery system. Microspheres are the novel drug delivery system & played vital role in the development of sustained and controlled release drug delivery system. Sulfasalazine is an anti-inflammatory drug used to treat inflammatory bowel disease, such as ulcerative colitis and mild-to-moderate Crohn's disease. Ulcerative colitis affects the innermost lining of large intestine (colon) and rectum. Small ulcers can develop on the colon's lining and can bleed and produce pus. Multi-particulate drug delivery system such as microspheres for colonic delivery shows several advantages over single unit dosage forms. Being a smaller size, it is expected to provide less inter and intra individual variability, more rapid and uniform gastric emptying, more uniform dispersion and reproducible transit through GI tract. In multi-particulate delivery systems, it is challenging to develop a colon-targeted sustained release dosage form.

MATERIALS AND METHODS

Sulfasalazine was obtained as gift sample from Jiuzhou Pharmaceutical co. Ltd., China. Eudragit S 100, Span 80, Ethanol, Liquid Paraffin, Dibutyl Pthalate were purchased from Jinendra Scientific Pvt. Ltd , Jalgaon.

Preparation of Sulfasalazine Microspheres:

Accurately weighed Eudragit S100 and dissolved in ethanol to form a homogeneous polymer solution. Sulfasalazine was added into the polymer solution and mixed thoroughly. Plasticizer dibutyl pthalate was added to above solution. Then above organic phase was slowly poured at 30° C into liquid paraffin (25 ml) containing span 80 having different concentration (0.5, 1, 1.5) with continuosly stirring by using mechanical stirrer having constant stirring speed to form emulsion. Then it was allowed to attain room temprature and stirring was continued until the residual solvent evaporated and smooth walled, rigid and discrete microspheres were formed. The formed microspheres were collected by decantation and washed thoroughly and dried at room temprature. The microspheres were then collected in desiccator over fused calcium chloride for further use.

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Research Article

Development and Validation of UV Spectrophotometric Method for Simultaneous Equation of Aspirin and Omeprazole in Tablet Dosage Form

Sandip S Chaudhari* and Swapnil D Phalak

TVES's HLMC College of Pharmacy, Maharashtra, India

ABSTRACT

YOSPRALA is newly designed tablet which effective in cardiovascular as well as gastrointestinal protection due to its immediate release of Omeprazole (40 mg) and delayed release of Aspirin (81 mg) or (325 mg) dose strength. Yosprala was approved by USFDA in Sept 2016 for cardiovascular and cerebrovascular diseases.

Aspirin is an antiplatelet agent & Omeprazole is proton pump inhibitor therefore it is made to develop a new analytical method for Simultaneous estimation of Aspirin and Omeprazole using Mehtanol as a solvent on the basis of solubility. The maximum Absorption (λ max) of Aspirin and Omeprazole was found at 276 and 301 respectively. Linearity range for aspirin was given at 10-50 µg/ml with %RSD value 0.997 and Omeprazole was 2-10 µg/ml with %RSD value 0.997. The method was validated for precision and % RSD was found less than 2.0 for both aspirin and omeprazole. The proposed method was statistically validated for standard deviation, relative standard deviation, coefficient of variance and the results were within the range. Hence the above method was simple, cheap, cost effective, economical, and robust.

Keywords: Yosprala; Aspirin; Omeprazole; UV spectroscopy; λ max

INTRODUCTION

Aspirin is an antipletelet agent while omeprazole is proton pump inhibitor used in combination for treatment of stroke and other cardiovascular disease. On extensive literature survey it was found that very few methods are reported for Simultaneous estimation of Aspirin and Omeprazole in combined dosage form by any analytical technique. These methods were developed on single Aspirin only or combination with other drugs by using UV spectroscopy in t dosage form, hence i was decided to develop a new method which having accurate, precise, economical, rapid and cost effective (Figure 1) [1].

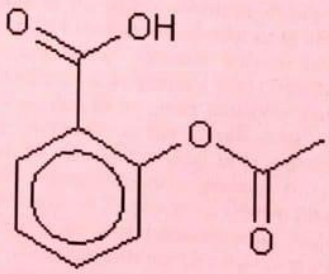

Figure 1: Aspirin.

Aspirin [2-(acetyloxy) benzoic acid], acts as an inhibitor of cyclo-oxygenase which results in the inhibition of the biosynthesis of prostaglandins. It also inhibits platelet aggregation and is used in the prevention of arterial and venous thrombosis (Figure 2) [2].

Omeprazole is a proton pump inhibitor used in the treatment of dyspepsia, peptic ulcer disease (PUD), Gastro esophageal reflux disease (GORD/GERD), Laryngopharyngeal reflux (LPR) and Zollinger-Ellison syndrome.

Omeprazole is entirely metabolised by the hepatic cytochrome P-450 system (CYP), mainly in the liver. Identified metabolites in plasma are the sulfone, the sulfide and hydroxyomeprazole [3].

Simultaneous equation method is used where a sample contains two absorbing drugs (X and Y) each of this absorbance λ_{max} of each other, it may be possible to determine both the drugs by the technique of simultaneous equation method.

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RESEARCH ARTICLE

invent: Spreading Knowledge

Extended Release Pellets of Diclofenac Sodium: Preparation, Characterization and Drug Release Study

Rahul S Tade[1*], Manoj M Bari[2]

Abstract: The present work has explored the use of the classic polymer in combination for the floating sustained release of diclofenac sodium. The effect of different polymer ratio has been evaluated by using the *in-vitro* dissolution and buoyancy testing. It was found that the density of polymers affects the floating behavior. The micromeritics properties of prepared batches were studied, which seems to fall within the specified limits. Polymer compatibility has been studied by using FT-IR analysis. The release kinetics of prepared five different batches has been studied, F1 was selected as an optimized batch, the total drug release in 10 hr was found to be 99.9%.

INTRODUCTION

Oral controlled drug delivery systems represent the greatest popular form of controlled drug delivery systems (CDDS) for the obvious benefits of oral route of drug administration. [1, 2] CDDS is an ongoing advancing system as one of the site-specific drug delivery systems. This delivery system, by means of a combination of one or more controlled release mechanisms, can enables the drug release in the upper part of the gastrointestinal (GI) tract and colon following oral administration. [3] A necessary characteristic of controlled release delivery system is that the period of drug action should dictated by the characteristics of drug molecules. There are different mechanistic approaches for the design of oral controlled release drug delivery systems such as matrix, reservoir, osmotic pressure, ion exchange resins, reformed density etc. The main challenge in developing an oral controlled-release drug delivery system is sustaining the drug release and maintaining the dosage form in the gastrointestinal tract (GIT) for an extended period of time. [4] The major limitation of most currently available oral drug delivery systems is a fast gastric-emptying time. Therefore, the past few decades have seen an increased interest in gastric drug retention. [5] Floating sustained-release effervescent capsular system was developed to allow the tablets to be released in the upper part of the GIT and overcome the inadequacy of conventional tablets. The sustained-release (SR) oral drug delivery system is proven to be effective in achieving optimal drug plasma concentration through the consumption of a single dose while maintaining the therapeutic value in the blood throughout its desired period of time. [6, 7]

Also, some attempts were made earlier by the researchers for taste-masked effervescent microcapsules. [8] And provided each microcapsule containing an effervescent admixture microencapsulated with ethylcellulose, they being used in formulating taste masked effervescent chewable tablets also containing microencapsulated, unpleasant tasting drugs such as non-steroidal, anti-inflammatory, NSAID drugs. [9] Gastro-retentive systems can significantly prolong the gastric residence time of drugs. The drug bioavailability of pharmaceutical dosage forms were influenced by various factors. If a drug is stable in gastric acid, prolonged gastric retention improves bioavailability reduces drug waste and improves solubility for drugs that are less soluble in a high pH environment. One of which is gastric residence time (GRT). [10, 11] The gastric emptying process from the stomach to small intestine generally lasts from a few minutes to twelve hours. This variability leads to an unpredictable bioavailability of an orally administered dosage form. Furthermore, the relatively short gastric emptying time can result in an incomplete release of drug from the dosage form. Floating drug delivery system (FDDS) is one of the gastro-retentive dosage forms that could prolong GRT to obtain sufficient drug bioavailability. [12-15] In present work diclofenac sodium (DCL) an acid insoluble NSAIDs used as a model drug. This drug requires multiple dosing due to its short biological half-life and it may lead to fluctuation in the plasma drug concentration and may fail to release the drug at the desired amount, which often results in poor patient compliance and inefficient therapy. [16, 17] Sustained release pharmaceutical capsules suitable for oral administration and particularly suitable for sustained release therapy with certain drugs that have absorption at upper GIT. Sirisha and co-investigators had been prepared extended release pellets of propranolol hydrochloride investigated the multiple unit extended release pellet and demonstrated its *in-vitro* drug release behavior. Moreover, the drug release patterns followed first order kinetics with acceptable stability range up to 6 months. [18]

In present study, an attempt has been made to prepare sustained release floating pellets enclosed in capsules. The prepared pellets were evaluated for drug content, infrared spectroscopy, *in-vitro* floating properties and *in-vitro* release drug behavior, which further filled in transparent hard gelatin capsule shell.

MATERIALS AND METHODS

All chemicals were obtained from a commercial supplier and used as received. Diclofenac sodium received as gift sample from Marksans Pharma Limited, Goa. Sodium alginate and Gum acacia were purchased from Genuine Chemicals co. Mumbai.

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RESEARCH ARTICLE

Corona viruses are a family of viruses that range from the common cold to MERS corona virus: A Review

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ABSTRACT:
A corona virus is a kind of common virus that causes an infection in your nose, sinuses, or upper throat. Most corona viruses aren't dangerous. COVID-19 is a disease that can cause what doctors call a respiratory tract infection. It can affect your upper respiratory tract (sinuses, nose, and throat) or lower respiratory tract (windpipe and lungs). It's caused by a corona virus named SARS-CoV-2. It spreads the same way other corona viruses do, mainly through person-to-person contact. Infections range from mild to serious. SARS-CoV-2 is one of seven types of corona virus, including the ones that cause severe diseases like Middle East respiratory syndrome (MERS) and sudden acute respiratory syndrome (SARS). The other corona viruses cause most of the colds that affect us during the year but aren't a serious threat for otherwise healthy people. In early 2020, after a December 2019 outbreak in China, the World Health Organization identified SARS-CoV-2 as a new type of corona virus. The outbreak quickly spread around the world. [1], [2]

KEYWORDS: corona virus, COVID-19, SARS-CoV-2.

INTRODUCTION:

Corona viruses are a group of related viruses that cause diseases in mammals and birds. In humans, corona viruses cause respiratory tract infections that can range from mild to lethal. Mild illnesses include some cases of the common cold (which is caused also by certain other viruses, predominantly rhinoviruses), while more lethal varieties can cause SARS, MERS, and COVID-19. Symptoms in other species vary: in chickens, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea. There are as yet no vaccines or antiviral drugs to prevent or treat human corona virus infections.

Corona viruses constitute the subfamily Orthocoronavirinae, in the family Coronaviridae, order Nidovirales, and realm Riboviria[1],[2]. They are enveloped viruses with a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry. The genome size of corona viruses ranges from approximately 26 to 32 kilobases, one of the largest among RNA viruses. They have characteristic club-shaped spikes that project from their surface, which in electron micrographs create an image reminiscent of the solar corona, from which their name derives.

A corona virus is a kind of common virus that causes an infection in your nose, sinuses, or upper throat. Most corona viruses aren't dangerous. COVID-19 is a disease that can cause what doctors call a respiratory tract infection. It can affect your upper respiratory tract (sinuses, nose, and throat) or lower respiratory tract (windpipe and lungs). It's caused by a corona virus

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Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
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FORMULATION DEVELOPMENT AND EVALUATION OF TOPICAL DRUG DELIVERY SYSTEM

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Abstract

Topical delivery has been developed for variety of disease and disorders. The treatment of skin diseases additionally as musculoskeletal disorders may well be advantageous from topical administration obtaining a substantial reduction in oral side effects with improved patient compliance. Many anti-inflammatory drugs are poorly water soluble and Nano suspension is that the techniques which is employed to enhance this characteristic, so anti-inflammatory drugs are chosen as a model for this study. Rizatriptan is employed to treat migraines. It helps to alleviate headache, pain, and other migraine symptoms (including nausea, vomiting, and sensitivity to light/sound). Prompt treatment helps you come back to your normal routine and should decrease your need for other pain medications. Rizatriptan belongs to a category of medicine called triptans. It affects a specific natural substance (serotonin) that causes narrowing of blood vessels within the brain. It's going to also relieve ache by affecting certain nerves inside the brain. Rizatriptan don't prevent future migraines or lessen how often you get migraine attacks the improved adoption of topical medication in current years has been impressive. this can be largely thanks to the very fact that the medication has proven to own more advantages than drawbacks. After all, the skin is right for drug administration, because it produces both systematic and native effects. Call it a life-changing medical innovation. Topical drug delivery systems have surely changed the way we glance at medication. More and more medical institutions and health practitioners are adopting this kind of medication in an endeavor to boost their services to patients.

Keyword: Rizatriptan, Migraine, Topical drug.

INTRODUCTION

Topical drug delivery system

Topical drug administration may be a localized drug delivery system anywhere within the body readily accessible organs on frame for topical administration and is main route of topical drug delivery System.Topical drug delivery system include an outsized sort of pharmaceutical dosage form like semi Solid Liquid preparation, sprays and solid powders. most generally semi-solid preparation for topical drug delivery include Ointment, gels and Creams.

Nanoemulgel:

Nanoemulgel is understood because the formulation of Nano emulsion based hydrogel by the

RESEARCH ARTICLE

inventi | Spreading Knowledge

Formulation Optimization and Evaluation of Taste-Masked Chewable Tablet of Fexofenadine Hydrochloride

Jadhav R G[1*], Bari M M[1], Barhate S D[1], Mohd Nasir[2]

Abstract: The aim of the study was to mask the bitter taste of fexofenadine HCl using Eudragit E100 and prepared the chewable tablet. The taste masked granules of fexofenadine HCl were prepared by wet granulation method using pH sensitive, cationic copolymer eudragit E100 and pre-gelatinized starch as disintegrant and prepared into chewable tablet. Central composite design (CCD) was applied as an optimization technique. As eudragit E100 is soluble at pH below 5, the dissolution was assessed using USP dissolution apparatus-II in 0.001 N HCl (pH 1.2) simulated gastric fluid was chosen as the dissolution medium. FTIR and DSC studies indicated that drug and excipients were compatible with each other. The key attributes i.e. hardness, dissolution and disintegration test was performed successfully. The optimized batch FH1 passes all the pre-compression and post-compression parameters and it was given as best by CCD. Taste-masking evaluation was done successfully. Disintegration time was obtained 16 min. The % drug released was found to be 99.40% within 60 min. It was concluded that the aim of taste masking of fexofenadine HCl using eudragit E100 and formulated into chewable tablet by wet granulation method was successfully achieved.

INTRODUCTION

Chewable tablets are solid oral dosage form intended to be chewed and then swallowed by the patient rather than swallowed whole. Chewable tablets are safe and easy to use in a diverse patient population of pediatric, adult or elderly patients who are unable or reluctant to swallow intact tablets due to size of the tablet or difficulty with swallowing. [1] Moreover it improves patient acceptance and convenience; no need of water for swallowing and ease of administration. Chewable tablets possess better bioavailability through bypassing disintegration (that increase dissolution) and absorption of drug is faster and are possible to use as substitute for liquid dosage forms where rapid onset of action is needed. Chewable tablets are available for many over the counter (OTC) and prescription drugs product. [2, 3] According to FDA, "Chewable tablets are an immediate release (IR), oral dosage form intended to be chewed and then swallowed by the patient rather than swallowed whole". [4]

Chewable dosage forms pose additional challenges in taste masking due to increased contact surface area as well as residence time in the mouth, enhancing any unpleasant taste and/or lingering aftertaste. However, only a sweetening agent might not overshadow unpleasant taste of drug. In these cases it is often necessary to create a barrier such as specific taste-mask coating between the active pharmaceutical ingredient (API) and the taste buds in order to improve palatability and aid compliance. [5, 6]

Fexofenadine HCl is a second generation long lasting, non-sedating selective and peripheral H1- receptor antagonist used in seasonal allergic rhinitis and chronic idiopathic urticaria. It has been approved and widely prescribed for alleviating symptoms of allergic rhinitis in many countries. [7, 8]

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Eudragit is pH sensitive, cationic copolymer which is yellow in colour, soluble in gastric fluid up to pH 5. Use in moisture protection and taste/odour masking:- Eudragit E polymers encapsulate sensitive actives, masking drug taste and odour and thus neutralizing the patients reticence to take medicine. [9, 10] In this investigation, chewable tablet of fexofenadine HCl was formulated using eudragit E100, as cationic copolymers to mask the bitter taste of drug by wet granulation method. Also the use of pregelatinized starch to accelerate the disintegration of chewable tablet, if accidently swallowed whole.

MATERIALS AND METHODS

Fexofenadine HCl was obtained as gift sample from Windlass Biotech Pvt. Ltd. Dehradun. Eudragit E100, pregelatinized starch, sucralose, lactose, mannitol was received from Medley Pharma Ltd., Andheri. Other excipients and chemicals were of standard pharmaceutical grade.

Compatibility Studies

1. Fourier Transform Infrared Spectroscopy (FTIR)

It is an analytical technique used to identify organic, polymeric and in some cases inorganic materials. This method uses infrared light to scan test sample and observe chemical properties. [11, 12] The FTIR studies were carried out using FTIR 1-S affinity. The mixture of drug and excipients were subjected to FTIR study to check drug and excipients interaction.

2. Differential Scanning Calorimetry (DSC)

DSC analysis was used to measure melting temperature and also to check the possibility of any interaction in between drug and excipients used in the formulation of tablets. It was assessed by carrying out thermal analysis of drug, excipients and physical mixture of drug and excipients. [12, 13] The DSC measurements were carried out using thermal analysis instrument (DSC 60 plus) equipped with a liquid nitrogen sub ambient accessory. 2-6 mg samples were scanned at 10°C/ min under nitrogen gas purge.

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RESEARCH ARTICLE

Formulation Optimization and Evaluation of Push Pull Osmotic Pump Tablet of Vildagliptin

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ABSTRACT:
Purpose- The present study was to develop an oral push-pull osmotic pump tablet of vildagliptin, DPP-IV inhibitor drug; which is BCS class I drug. **Method-** The tablets were prepared by the wet granulation method using polyox and osmotic agent NaCl. The granules were compressed into bilayered tablet by conventional compression machine. The bilayered core osmotic tablets were coated with cellulose acetate in a conventional pan coating. In-vitro dissolution was evaluated using USP dissolution apparatus II in 0.1 N HCl pH 1.2 buffers for 2 hrs and phosphate buffer pH 7.5 for 22 hrs respectively. The formulated optimized batch VP1 were kept to stability studies for 3 months. **Result-** The formulated optimized batch VP1 of PPOP tablet shows 2hrs lag time with zero order release kinetic. In –vitro drug release was obtained 91.45 % up to 22hrs respectively. Polyox in push-pull layer along with osmotic agent and cellulose acetate controlled the drug release pattern from formulated PPOP tablet. No significant changes were observed upto the period of 3 months of storage during stability study. **Conclusion-** The PPOP tablet of vildagliptin was able to deliver the drug in controlled pattern over a long period of time by the process of osmosis. Conventional compression and pan coating method can be used to prepare PPOP tablet successfully.

KEYWORDS: PPOP, Bilayered tablet, Polyox, Sodium chloride, Vildagliptin, Cellulose acetate, Factorial design.

INTRODUCTION:

Push–pull osmotic systems (PPOS), also known as push–pull osmotic pumps, have been successfully developed and marketed to extend the release of poorly soluble compounds for various indications, such as hypertension, diabetes, and asthma. In these chronic disease treatments, PPOS were reported as a drug delivery technology reducing the food interaction often observed with poorly soluble drug substances as well as enabling a once-a-day administration and thereby patient compliance.

Vildagliptin is the DPP-IV inhibitor class of drug with antidibetic activity. This in turn inhibits the inactivation of GLP-1 by DPP4, allowing GLP-1 to potentiate the secretion of insulin in the beta cells. Systemic bioavailability is 90% and elimination half life is 1.5hr.

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MATERIAL AND METHOD:

MATERIAL:

Vildagliptin and cellulose acetate, Polyox WSR coagulants, polyox WSR N 80 were obtained as gift

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Water Soluble Method Development and Validation of Cyclobenzaprine Hydrochloride and Aceclofenac in Bulk and Tablet Dosage form By UV-Visible Spectroscopy.

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ABSTRACT

A Water Soluble UV spectrophotometric method development using simultaneous equation and Q- absorbance ratio method was developed for determination of Cyclobenzaprine hydrochloride and Aceclofenac in a binary mixture. In the proposed method, the signals were measured at 233.0 nm and 268.9 nm corresponding to absorbance maxima of Cyclobenzaprine hydrochloride and Aceclofenac in mixture of 20% urea and sodium benzoate. Isobestic point was found at 245 nm. Linearity range was observed in the concentration range of 2-10 µg/ml for Cyclobenzaprine hydrochloride and 5-25 µg/ml for Aceclofenac. Concentration of each drug was obtained by using the absorptivity values calculated for both drugs at two wavelengths, 233.0 nm and 268.9 nm and solving the simultaneous equation. For Q-Absorbance ratio method Concentrations of both drug was found at Isobestic point 245 nm. Developed method was applied to laboratory mixture and its pharmaceutical formulation. The method was validated statistically and recovery study was performed to confirm the accuracy of the method. The method was found to be rapid, simple, accurate and precise.

Key words: Cyclobenzaprine hydrochloride, Aceclofenac, Simultaneous estimation method, Q-absorbance ratio method, water soluble method development, UV-Visible spectrophotometer.

INTRODUCTION:

Today, there is a demand for the development of non-toxic methods, without pollution and without danger to the environment, of bulk medicines and pharmaceutical preparations. The use of organic solvents in the development of analytical methods may increase the cost of analysis. It has the potential to affect the cost of the formulation. Cost-effective and safe methods of analysis for pharmaceutical formulations must therefore be developed. Hydrotropy is the best option for developing a safe and cost-effective method of analysis.

Hydrotropy is a Solubilization phenomenon in which the addition of a large amount of the second solute increases the aqueous solubility of another solute. Hydrotropy term has been used in the literature to designate non-micelle-forming substances. To insoluble substance to make soluble; liquid or solid, organic or inorganic would be used. [1] Hydrotropy is the term used for the enhancement of the solubility of an insoluble solute in water by adding the agent called hydrotrope. The formation of molecular

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RESEARCH ARTICLE
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FORMULATION AND IN-VITRO EVALUATION OF EFFERVESCENT TABLETS

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Abstract

Hypertension is the commonest cause of high blood pressure in the elderly. The incidence increases with age advancement. Long acting dihydropyridines like amlodipine is very effective antihypertensive agent in management of ISH in elderly because of its vasodilatory as well as negative ionotropic effect. The main Aim of Present work is to Formulate and Evaluate Amlodipine besylate Effervescent and direct compression tablets tablets in order to enhance its Bio-availability by using Amlodipine besylate are the main ingredients in effervescent Tablets and Fast Disintegrating agents like sodium starch glycolate, Crosscarmilose. Different batches of (F1-F6) immediate release tablets of Amlodipine besylate were prepared by using various concentrations of Citric acid & Sodium bicarbonate as effervescent agents and sodium starch glycolate, Cross cormilose as super disintegrates. Evaluation parameters like thickness, hardness, friability, weight variation and disintegration tests of the formulations were found to be satisfactory. Among all prepared formulations F6 was shown desired release pattern than others. Formulations F1- F6 did not show the optimum drug release .Hence effervescent technique is superior to direct compression by super disintegrates. And thus the F6 formulation was found to be the desired immediate release tablet for the treatment of Hypertension

Keywords: Amlodipine besylate, Citric acid , Sodium bicarbonate ,sodium starch glycolate, and Cross carmilose

INTRODUCTION

Floating drug delivery systems were first described by Davis in 1968[1,2].It is possible to prolong the gastric residence time of drugs using these systems. Several techniques were used to design gastro retentive dosage forms. These include, floating drug delivery systems (FDDS), high-density DDS, muco- adhesive systems, swelling and expanding DDS, modified shape systems, and other delayed gastric devices[3,4].Floating drug delivery systems, also called as hydrodynamically balanced system, is an effective technology to prolong the gastric residence time in order to improve the bioavailability of the drug[5].This technology is suitable for drugs with an absorption window in the stomach or in the upper part of small intestine[6],drugs acting locally in the stomach[7] and for the drugs that are poorly soluble or unstable in the intestinal fluid[8]. Effervescent floating drug delivery systems generate gas (Co2), thus reduce the density of the system and remainbuoyant in the stomach for a

FORMULATION DEVELOPMENT & EVALUATION OF COLON TARGETED DOUBLE COATED TABLETS

Dr. Shashikant D. Barhate[1], Dr. Sandip R. Pawar[2]

Abstract

Although the underlying mechanisms are still in the realm of speculation, accumulating evidence indicates that NSAIDs can lower the incidence of colorectal carcinomas. However, long-term uses of non-selective NSAIDs can lead to gastrointestinal toxicity from sustained inhibition COX-1. But one can overcome such problem by formulating them as colon specific delivery. In the light of this information, the present study was carried out to develop oral colon targeted drug delivery system for Nimesulide utilizing recently designed and patented system called CODES™, which consisted of a lactulose containing core over coated with both Eudragit E and Eudragit L designed to rapidly disintegrate in the colon, in order to give a new life for an existing banned drug. CODES™ tablets were prepared by tabletting the granulation of Nimesulide and lactulose, followed with film coating. The prepared tablets were evaluated on the basis of various pharmacopoeial characteristics. The onset of Nimesulide release was found to dependent on the coating level of Eudragit E, and at Eudragit E coating level of 8% (coating weight gain), the onset of in vitro drug release was found to be optimum. It is concluded that Nimesulide can be targeted to hindgut by Novel approach of CODES™ in a simple and economic way.

Keywords: Nimesulide; NSAIDs, Colorectal Cancer; Colon Specific Delivery; Polymethacrylate polymers.

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Formulation Design And Characterization Of Matrix Tablets

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Abstract:

The aim of this study was to design oral controlled release lamivudine matrix tablets using hydroxypropyl methylcellulose (HPMC) as the retardant polymer, sodium alginate, acacia gum to study the effect of various formulation factors such as polymer proportion, polymer viscosity, and compression force on the in vitro release of drug. In vitro release studies were performed using (USP II) with paddle apparatus (basket method) in 900 mL of pH 6.8 phosphate buffer at 50 rpm. The release kinetics were analyzed using the zero-order model equation, Higuchi's square-root equation, and the Ritger-Peppas empirical equation. Compatibility of the drug with various excipients was studied. Increase in compression force was found to decrease the rate of drug release. Methematical analysis of the release kinetics indicated that the nature of drug release from the matrix tablets was dependent on drug diffusion and polymer relaxation and therefore followed non-Fickian or anomalous release. No incompatibility was observed between the drug and excipients used in the formulation of matrix tablets. The developed controlled release matrix tablets of lamivudine, with good initial release (32% in 4th hour) and extension of release up to 14 hours, can overcome the disadvantages of conventional tablets of lamivudine.

Keywords: Controlled release, matrix tablets, hydroxypropyl methylcellulose, lamivudine

INTRODUCTION:

The oral route is most preferred route for administration of drugs. Tablets are the most popular oral formulations available in the market and are preferred by patients and physicians alike. In long-term therapy for the treatment of chronic disease conditions, conventional formulations are required to be administered in multiple doses and therefore have several disadvantages [1]. Controlled release (CR) tablet formulations are preferred for such therapy because they offer better patient compliance, maintain uniform drug levels, reduce dose and side effects, and increase the safety margin for high-potency drugs [2]. The major drawbacks of antiretroviral drugs for the treatment of AIDS are their adverse side effects during long-term therapy, poor patient compliance, and their huge cost.4,5 Lamivudine is a potent antiviral agent used in the treatment of

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RESEARCH ARTICLE

Formulation Optimization and Evaluation of Novel Oro-dispersible Tablet of Bilastine

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ABSTRACT:
The current study focuses on the development, optimization, and assessment of bilastine orodispersible tablets (ODTs) for the treatment of allergic disorders such as rhino-conjunctivitis and urticaria flavour concealed by an organoleptic technique. The formulation was optimized based on the direct compression method by the use of various super disintegrants such as cross povidone, sodium starch glycolate and croscarmellose sodium. The excellent product performance of ODTs in terms of disintegration time and in-vitro drug release may be achieved by varying the amount of super disintegrants. The direct compression approach was used to create novel anti-histamine Orodispersible tablets of bilastine. Design expert software was used to create nine formulations (BLS1-BLS9) by altering super disintegrant concentrations in order to optimise the optimal formulation using 32 factorial design and central composite design in the quadratic model (version 13.0.5.0). Pre-Compression studies like bulk density, tapped density, angle of repose, carr's index, Hausner's ratio to note flow properties of powder and compatibility such as Fourier transform infrared spectroscopy (FTIR) and differential scanning calorimetry (DSC) were performed to check any interaction between drug and various super disintegrant. The hardness, thickness, diameter, weight variation, friability, disintegration time, dissolution studies, wetting time, and uniformity of content of formulated ODTs were all evaluated. All the results were within the acceptable pharmacopeial limits and were evaluated statistically by using one-way ANOVA test. From the result, BLS8 was observed optimized formulation prepared by taste masking by an organoleptic method as a novel technique using direct compression as conventional technology containing a combination of various sweetening and flavoring agents such as orange and peppermint flavor.

KEYWORDS: Orodispersible tablet, Bilastine, Organoleptic method, Super disintegrates, DOE, Marketed Tablet.

1. INTRODUCTION:

Bilastine is a new second-generation H1-antihistamine approved for the symptomatic treatment of allergic rhino-conjunctivitis and chronic urticaria (CU). Bilastine, with its efficacy and safety profile, optimizes the evaluation of research on anti-histamine it works by blocking histamine receptors.

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Orodispersible tablets of bilastine were prepared using cross povidone, mannitol as a super disintegrant and aerosil, magnesium stearate by direct compression method by using taste masking by organoleptic method[2]. Flavor masking is the apparent elimination of an unpleasant taste that would otherwise be there. The ideal way to lessen or suppress bitterness would be to find a universal inhibitor of all bitter-tasting compounds that does not interfere with other taste modalities, such as sweetness or saltiness[3]. A number of novel, cutting-edge methods have recently been established for the formulation of orodispersible tablets[1].

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RESEARCH ARTICLE

Bempedoic acid a novel drug used for the treatment of Hyperlipidaemia: A Review

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ABSTRACT:
Hyperlipidemia is characterized by elevated levels of lipids that can be caused by a variety of genetic or acquired disorders. In adults, hyperlipidemia has been shown to be a major risk factor in developing CVD. Currently statins, Bile Acid Sequestrants (Resins), Cholesterol Absorption Inhibitors, Fibric Acids, Nicotinic Acid, Omega-3 Fatty Acids are used for the treatment of hyperlipidemia. Statins (3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors) are the first-line drugs for the treatment of hyperlipidemia by helping to decrease LDL-C and TG levels and increase HDL-C levels in familial and severe hypercholesterolemia. Statins were found to be associated with muscular adverse effects cover a wide range of symptoms, including asymptomatic increase of creatine kinase serum activity and life-threatening rhabdomyolysis Bempedoic acid is a novel lipid-lowering drug with a unique mechanism of action. This article includes a brief review for the Bempedoic acid used in the treatment of hyperlipidaemia.

KEYWORDS: Bempedoic acid, hyperlipidemia, tendon rupture.

INTRODUCTION:

The medical disease known as hyperlipidemia is characterised by an increase in the blood's lipid profile and/or lipoprotein levels in any or all cases. Additionally, it is known as hyperlipoproteinemia and hypercholesterolemia[1]. Important coronary heart disease (CHD) risk factors include abnormalities of different cholesterol lipoprotein lipids, such as high total cholesterol, low density lipoprotein (LDL) cholesterol, very low density lipoprotein (VLDL) cholesterol and triglycerides, and low high density lipoprotein (HDL) cholesterol.[2] Hyperlipidaemia, or elevated plasma lipid levels, specifically total cholesterol, triglycerides, and LDL, as well as a decline in HDL, are known to cause atherosclerosis to stall in its development.

Numerous problems, including heart attack, coronary artery syndrome, stroke, atherosclerosis, myocardial infarction, and pancreatitis, are caused by hyperlipidemia. The 3-hydroxy-3-methylglutaryl-coenzyme A reductase inhibitor statin effectively limit hepatic cholesterol formation and sufficiently reduce LDL-C by up to 50% from the baseline[3]. As alternatives to statins, bile acid-binding resins, fibrates, niacin, and ezetimibe have been approved for the treatment of dyslipidemia[4].

The most frequent side effects of statins include asymptomatic increases in hepatic transaminases and muscle-related adverse events, which can range from myalgia to the extremely rare but potentially fatal condition known as rhabdomyolysis. Additionally, current research indicates that taking high doses of statins may make people more susceptible to developing type 2 diabetes[5].

Esperion Therapeutics is developed bempedoic acid, a brand-new non-statin oral antihyperlipidemic medication, to treat hypercholesterolemia. Bempedoic

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RESEARCH ARTICLE

Formulation and Evaluation of Extended Release Oral Suspension of Metformin Hydrochloride

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ABSTRACT:
The research scheme of formulation and evaluation of extended-release oral suspension of metformin hydrochloride with the objective to develop a stable, redispersible oral liquid suspension based on extended-release pellets to facilitate swallowing in patients with diabetes. Pellets were prepared by using Bed Coating During Sliding method with the Metformin hydrochloride used as antidiabetic drug and various polymers. Extended release was affected by the ethylcellulose coating of drug formulation used as coating agent, MCC, Lactose, PVP K-30 Prepared metformin hydrochloride pellets putted in to prepared sugar free syrup vehicle using polymers like Xanthan Gum as a suspending agent for uniform drug distribution, Sorbitol solution, Aspartame are artificial sweeteners, Sodium Citrate, Potassium sorbate, Methyl paraben. The formulation was optimized based on Design expert software and Central Composite Design was used for study. Drug and polymers were studied for compatibility and interaction study, carried out by FTIR and DSC and found to be compatible to each other. The Redispersibility, Sedimentation volume, Sedimentation rate, Rheological Study, Viscosity, Specific gravity, Particle Size, dissolution study and %Drug content of formulated batches was evaluated. All the results were within the acceptable pharmacopeial limits and were evaluated statistically by using one way ANOVA test for quadratic model. From the result, MET6 batch was observed optimized formulation because up to 8 hrs 85.25% drug was released. kinetic studies of the drug release for optimized formulation follows zero order kinetics.

KEYWORDS: Extended-Release Oral Drug Delivery System, Metformin Hydrochloride, Bed Coating During Sliding method, DoE.

1. INTRODUCTION:

In recent decades pharmaceutical industries are focusing on development of extended-release formulations due to its various advantages[1].

A significant proportion of the populations such as paediatrics and geriatrics have difficulty in swallowing solid oral dosage forms and oral route of drug administration have wide acceptance up to 50-60% of total dosage forms[2,3]. Most oral dosage forms such as tablets and capsules are unsuitable for older people with swallowing difficulties. Capsules opening and tablet crushing are commonly used to overcome this problem[4,5]. An oral pharmaceutical suspension presents a novel means of circumventing the potential problems associated with the administration of such systems[6]. Extended release (ER) oral drug delivery System is the

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RESEARCH ARTICLE

Formulation and Evaluation of Capsule-in-Capsule Technology for Biphasic delivery of Glipizide

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ABSTRACT
In the present research work, to formulation and evaluation of capsule-in-capsule technology for biphasic delivery of Glipizide. The advantages of fast releasing liquid-filled-capsules and slow release beads-filled-capsules were combined to meet the optimized requirements of our biphasic drug delivery system. Glipizide slow releasing beads were prepared by ionotrophic gelation method by using natural polymers like Sodium alginate, Pectin and were filled into a smaller capsule. Glipizide fast releasing liquid dispersion was prepared by using either Castor oil carriers and further prepared a glipizide emulsion. This fast releasing liquid and slow releasing beads-filled-capsule was further inserted into a bigger capsule body and Seal the capsule by hydro alcoholic solution. The various formulation batches were subjected to physicochemical studies, entrapment efficiency, drug content, *in vitro* drug release and stability studies. Interaction studies reveal that there was no interaction between drug and polymers employed in this study. The optimized capsule-in-a-capsule formulation released 22.65±0.74% of drug at the end of 30 min and 95.04±0.88% of drug at the end of 12h. The drug release profile of Glipizide capsule-in-a-capsule formulation fits well with Pepas model followed by zero order, first order and Korsemeyer-peppa's model. Korsmeyer-Peppas model analysis indicated that the drug release followed non-Fickian transport mechanism. The stability results indicate that the various parameters of our optimized formulation are not affected on storage at 45°C/75%RH up to 4 months. Target of capsule-in-capsule drug delivery loading dose reaches therapeutic drug level in blood plasma for quicker onset of action and Maintenance dose which maintain an effective therapeutic level for prolong period. The prepared Glipizide biphasic cap-in-cap will be used for treatment of Diabetes.

KEYWORDS: Biphasic drug delivery system, Capsule-in-a-capsule formulation, Fast releasing liquid-filled-capsules, slow release beads-filled-capsules.

1. INTRODUCTION:

One of the most popular solid dosage shapes used for oral administration of active substances is the capsule. Capsule-in-capsule technology is an innovative approach to drug delivery that involves placing one or more smaller capsule inside a larger one.

Solid dosage forms can be divided into two main categories[1] immediate release dosage forms, where

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RESEARCH ARTICLE

Formulation Development and Evaluation of Sustained Release Rectal Suppository of Domperidone Maleate

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ABSTRACT:
The aim of present research was formulation development and evaluation of sustained release rectal suppository of domperidone maleate. By using Hot fusion method in that combination of PEG 4000 and poloxamer 188 was used as polymer and HPMC K_4M was used for sustained released effect and surfactant was utilized for increasing bioavailability. The formulation was optimized based on Design expert software and Central Composite Design was used for study. Fourier transform infrared spectroscopy (FTIR) and differential scanning calorimetry (DSC) were performed to check any interaction between drug and excipients. The hardness, weight variation, friability, micro melting range test, disintegration time, dissolution studies and uniformity content of formulated batches were evaluated. All the results were within the acceptable pharmacopeial limits and were evaluated statistically by using one way ANOVA test for quadratic model. From the result, S7 batch was observed optimized formulation because upto 8 hrs 90.82% drug was released. kinetic studies of the drug release for optimized formulation follows zero order kinetics. This study was concluded that rectal route was more beneficial than oral route because it avoids first pass metabolism and enhance bioavailability of Domperidone maleate. The prepared Domperidone maleate suppository will be used for emesis caused due to chemotherapy in cancer patient and effective in the treatment of nausea and vomiting induced by drugs, migration and radiation sickness.

KEYWORDS: Domperidone maleate, PEG 4000, Poloxamer 188, Design of experiment, Sustained release, First pass effect, Hot fusion method, Rectal suppository.

1. INTRODUCTION:

Rectal Drug Delivery System (RDDS) means administration of drug or pharmaceutical formulation by rectum for local or systemic effect. The rectal route has received much attention in recent years because it is the more suitable and reliable route of systemic administration of drugs.

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Drugs administered through the rectal route circumvent the hepatic first-pass effect, improving the bioavailability of many drugs. Besides, the decline in risk of infection, the rectal route gives ease and convenience, resulting in increased patient compliance. With the increase of solubility of drugs in the adjuvants and vehicles, drug absorption via the rectal route also increases[6,7]. A conventional suppository is a solid dosage form intended for insertion into body orifices like; rectum, vagina, urethra where they melts or softens at body temp. and exert local or systemic effec[9]. As per

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Preparation And Evaluation Of Rectal Bilayer Suppositories Of Lidocaine And Aceclofenac For Proctology

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ABSTRACT:

The purpose of this research was preparation and evaluation of rectal bilayer suppositories of lidocaine and aceclofenac were prepared by fusion method (conventional mould). In that different concentrations of polymers like PEG 1000 and PEG 4000 was used. The formulation was optimized by using DOE and Central Composite Design was used for study. And the prepared bilayer suppository was evaluated by various parameters like Appearance, weight variation, content uniformity, drug content, Thickness, and Diameter, Hardness, Friability, melting range test, liquefaction time, Disintegration test, Dissolution study. From the result, S4 batch was optimized formulation because upto 8 hrs 97.54% drug was released. kinetic studies of the drug release for optimized formulation follows first order kinetics. Bi-layered suppository is beneficial technology than the single layered suppository. These immediate and sustained release bi-layered suppositories will be used for haemorrhoids and proctologic disease. In that Lidocaine as immediate release local anaesthetics and Aceclofenac as sustained release non-steroidal anti-inflammatory agent.

Keywords: Bilayer suppositories, Lidocaine, Aceclofenac, Proctology, DOE, Immediate release, Sustained release.

1. INTRODUCTION:

Suppositories are a medicated solid dosage form in tended into the body orifices. The term suppositories have its origin in Latin and means. "To place under". It is thought that suppositories were first used in nursing facilities to be administered to elderly patients who were not capable of receiving medication through more traditional delivery system. The rectum is an interesting area for drug absorption because it is buffered and has a neutral pH. It also has a very little enzymatic activity, the rectal mucus is more capable of tolerating various drug related irritations than the gastric mucosa. The ano-rectal physiological provides a sufficiently adequate surface area for drug absorption. The surface area is also permeable to non-ionized drugs. Suppositories formulations are rather efficient in variety of different base to increase absorption and reduce complications. The osmosis process allows the drug to transfer from the vehicle in the suppositories across the membrane of the rectum, and into the haemorrhoidal veins. The higher the concentration and the greater the solubility, the more efficient is the transfer of medication. The designing bi-layered suppositories is to administer fixed dose combinations of different drugs , to separate the incompatible drugs from each other and to control the delivery rate of either single or two different drugs. Most suppositories in this group are used to relive the pain and irritation of haemorrhoids. They contain local anaesthetics such as chinchocaine and benzocaine; astringents such as bismuth subgallate. Drug release from suppositories and subsequent

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RESEARCH ARTICLE

Formulation Development and Evaluation of Floating Beads of Propranolol Hydrochloride

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ABSTRACT:
Purpose: The purpose of present research work was to prepare sodium alginate and pectin antihypertensive floating beads of propranolol hydrochloride. **Methods:** Floating beads were prepared by using Ionotropic gelation technique using various natural and synthetic polymers in different proportion like sodium alginate, pectin, hydroxy propyl methyl cellulose k4m and calcium carbonate. **Result:** The floating beads were formulated and evaluated to physiochemical studies, Entrapment efficiency, swelling index, Invitro drug release, drug content, buoyancy studies (Floating time, floating lag time, total floating time) on the basis of evaluation of all floating beads were show good results. **Conclusion:** It Concluded that floating drug delivery system are float immediately upon contact with gastric fluid for increasing the bioavailability of drug and patient compliance.

KEYWORDS: Propranolol Hydrochloride, Ionotropic Gelation Technique, Floating Time, Patient Compliance.

INTRODUCTION:

Oral route is the most preferable route for the drug administration. Floating drug delivery system are low-density based systems with sufficient buoyancy to float over the gastric contents.[1,2] Floating drug delivery system promises to be a potential approach for gastric retention. Floating drug delivery system (FDDS) is hydrodynamically balanced system have bulk density lower than gastric fluid and thus remains in the body for prolonged period of time.[3,17,19] Propranolol Hydrochloride is Beta adrenergic receptor antagonist used to treat hypertension it has a long duration of action it is given once or twice daily.

It is BCS class I drug i.e., High Solubility High Permiability. Propranolol hydrochloride is a nonselective beta- adrenergic blocking agent. It inhibits response to adrenergic stimuli by competitively blocking, beta-adrenergic receptors within the myocardium and within bronchial and vascular smooth muscle. Propranolol hydrochloride has no intrinsic sympathomimetic activity.[4,13] Beads are distinct spherical microcapsule that works as the solid substrate on which the drug is coated or encapsulated in the core of beads. Floating beads is useful for several categories of drugs which act locally in stomach, poorly soluble in alkaline pH, having narrow absorption window, unstable in intestine or colonic environment and primarily absorbed in stomach[30,15]. Floating beads are formulated for various drugs which are available for treatment of diseases like gastric ulcer, duodenal ulcer, Zollinger – Ellison syndrome and hypertension. It is expected that floating beads may enhance the pharmacotherapy of drugs.[5,6,7,18]