Criteria 3- Research, Innovation and Extension

3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year

DVV Query

- Provide Cover page, content page, first page, ISBN numbers, title, author, Department/ School/ Division/ Centre/ Unit/ Cell, name, and year of publication of -

- An Analytical Method Development for Analyzing Release & Permeation Profile Of Drug When Co-ordinated With Medicated Wines Containing One Or More Ingredients Of Trikates for the year 2017-18
- Development of in-situ gel formulation of potassium nitrate for dentin hypersensitivity
- Development of self-nanoemulsifying drug delivery system of capsanthin
- Development of anti-dandruff gel formulation of fenugreek leaves extract for the year 2018-19
- Ivrt of acyclovir semisolid formulations using immersion cells: study of effect of test and formulation variables
- Chrono modulated delivery system of metoclopramide hydrochloride: an effective therapy for gastric paresis and morning sickness Repurposing Drugs for the COVID-19: A New Perspective for the year 2019-20

- Effect of borneol on permeability of BCS Class III drug in self nanoemulsifying drug delivery system
- Pharmaceutical intellectual property rights: Current Perspective of Modern India
- To compare quality of granules of ibuprofen obtained from super gran™ and rapid mixer granulator for the year 2020-21
- "Development and characterization of pegylated liposomes for oral delivery of insulin"
- Application of dissolution for evaluation of taste masking effect of Primaquine Phosphate complex developed with ion exchange resins
- Molecular docking,ADMET study & computational investigation of 1,5-diphenyl-2,4-disubsituted-1H-Imidazole.

DVV Clarifications

- The data for the aforementioned queries is provided below-

3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year

S. No	ISBN No.	Title	Author	Department	Name of the conference	Name of organizing institute	Year of publication	Weblink to publication
1	N/A	An Analytical Method Development For Analysing Release & Permeation Profile Of Drug When Co-ordinated With Medicated Wines Containing One Or More Ingredients Of Trikates	Dr. Anagha M. Joshi	Pharmaceutical Chemistry	Innovation 2017, Regional Research Conference Organized by Savitribai Phule University	STES's Smt. Kashibai Navale College Of Pharmacy, Kondhawa	2017	N/A
2	N/A	Development of in-situ gel formulation of potassium nitrate for dentin hypersensitivity	Ms.Meghna Dabhadkar/ Dr.Madhur Kulkarni	Pharmaceutics	17th International symposium of controlled release society- Indian Chapter on **Advances in Technology and Business Potential of New Drug Delivery systems**	Controlled release society, Indian Chapter	2018	https://crsic.org/abstract-books/
3	N/A	Development of self-nanoemulsifying drug delivery system of capsanthin	Dr. Madhur Kulkarni/ Nisha Goge	Pharmaceutics	17th International symposium of controlled release society- Indian Chapter on **Advances in Technology and Business Potential of New Drug Delivery systems**	Controlled release society, Indian Chapter	2018	https://crsic.org/abstract-books/

4	N/A	Development of anti-dandruff gel formulation of fenugreek leaves extract	Dr. Madhur Kulkarni/ Nikhil Khadkikar/ Vitthal Jadhav	Pharmaceutics	17th International symposium of controlled release society- Indian Chapter on **Advances in Technology and Business Potential of New Drug Delivery systems**	Controlled release society, Indian Chapter	2018	https://crsic.org/abstract-books/
5	N/A	IVRT of acyclovir semisolid formulations using immersion cells: study of effect of test and formulation variables	Dr.Madhur Kulkarni/ Shrikant Potdar/ Mr.Aditya Marfatiya	Pharmaceutics	18th International symposium of controlled release society- Indian Chapter on **Advances in Technology and Business Potential of New Drug Delivery systems**	Controlled release society, Indian Chapter	2019	https://crsic.org/abstract-books/
6	N/A	Chrono modulated delivery system of metoclopramide hydrochloride: an effective therapy for gastric paresis and morning sickness	Roopal Bhat/ Dr. Madhur Kulkarni/ Dr. Sandhya Shenoy	Pharmaceutics	18th International symposium of controlled release society- Indian Chapter on Advances in Technology and Business Potential of New Drug Delivery systems	Controlled release society, Indian Chapter	2019	https://crsic.org/abstract-books/

7	N/A	Repurposing Drugs for the COVID-19: A New Perspective	Mrs. Rutuja Kamble	Pharmaceutical Chemistry	The National Level e-Poster Competition "COVID-19 Pandemic	Dr. D.Y Patil Institute of Pharmaceutical sciences and research	2019	
8	N/A	Effect of borneol on permeability of BCS Class III drug in self nanoemulsifying drug delivery system	Dr. Madhur Kulkarni/ Ms. Roopal Bhat	Pharmaceutics	19th International Symposium on Advances in Technology and Business Potential of Novel Drug Delivery Systems	Controlled release society, Indian Chapter	2020	https://crsic.org/abstract-books/
9	N/A	Pharmaceutical intellectual property rights: Current Perspective of Modern India	Mrs. Rutuja Kamble	Pharmaceutical Chemistry	International e-Poster Competition on "Emerging Trends in IPR"	Seth Govind Raghunath Sable college of Pharmacy, Saswad	2020	
10	N/A	To compare quality of granules of ibuprofen obtained from super gran™ and rapid mixer granulator	Dr. Madhur Kulkarni/ Kiran Bansude, Dhanashree Bhondve	Pharmaceutics	19th International Symposium on Advances in Technology and Business Potential of Novel Drug Delivery Systems	Controlled release society, Indian Chapter	2020	https://crsic.org/abstract-books/

11	N/A	Development and characterization of pegylated liposomes for oral delivery of insulin	Ms.Nitisha Soni	Pharmaceutics	"Translational Research for Nanomedicine"(oral Presentation)	Indore Institute of Pharmacy	2021	N/A
12	N/A	Application of dissolution for evaluation of taste masking effect of Primaquine Phosphate complex developed with ion exchange resins	Dr. Mansi Wagdarikar/ Dr.Madhur Kulkarni	Pharmaceutical Chemistry/ Pharmaceutics	DRPI 2021	Society for Pharmaceutical Dissolution Studies	2021	Abstract Book 2021 (spds.in)
13	N/A	Molecular docking, ADMET study & computational investigation of 1,5-diphenyl-2,4-disubsituted-1H-Imidazole.	Mrs. Rutuja Kamble	Pharmaceutical Chemistry	Clinical Pharmacy Practice and Research (ICCPPR-2022)	VELS institute of Science, technology and advance studies, Chennai	2022	N/A

Additional documents-

Title- An Analytical Method Development For Analysing Release & Permeation Profile Of Drug When Co-ordinated With Medicated Wines Containing One Or More Ingredients Of Trikates

SAVITRIBAI PHULE PUNE UNIVERSITY

(Formerly University of Pune)

University Research Cell

INNOVATION - 2017

REGIONAL RESEARCH CONFERENCE

Certificate of Participation

This is to certify that Dr./Shri./Smt. Anagha M. Joshi of SCES's Indira College of Pharmacy, Pune participated and presented Paper/PPT entitled An Analytical Method Development For Analysing Release & Permeation Profile of Drug when Co-ordinated with Medicated Wines Containing One or More Ingredients of Trikatu. in the Regional Research Conference "INNOVATION - 2017" for College/Institute Teachers in the subject Pharmaceutical Chemistry held at SIES's SNT. Kashibai Nawale College of Pharmacy Kondhwa, on 18th November 2017 (Dist. Pune - 48

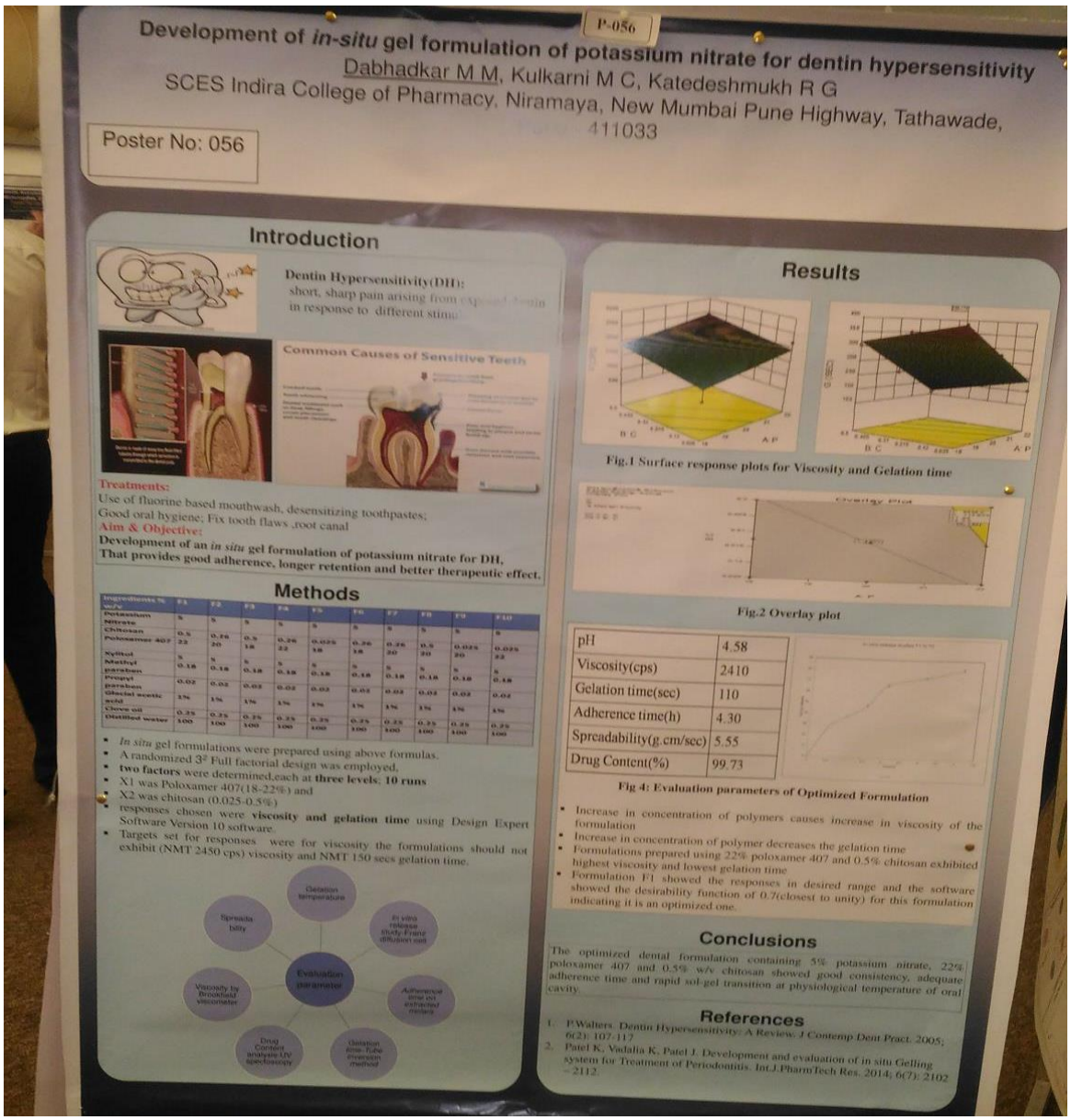
(Dr. R. B. Patil) Coordinator

DR. S. D. Sawant Principal

Dr. S. P. Bathe Deputy Registrar

Dr. Nitin Karmalkar Vice-Chancellor

Title- Development of in-situ gel formulation of potassium nitrate for dentin hypersensitivity



Title- Development of self-nanoemulsifying drug delivery system of capsanthin

DEVELOPMENT OF SELF NANO EMULSIFYING DRUG DELIVERY SYSTEM OF CAPSANTHIN

Kulkarni M, Goge N,, Hastak V
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P-066

Introduction

Capsanthin, an intensely red coloured pigment isolated from the red ripe fruit of paprika (*Capsicum annuum L.*) is a carotenoid having very potent chemo-preventive activity[2] However, its application as a natural colourant and as an antioxidant is limited by its very poor aqueous solubility.

Aim

To develop self nano emulsifying drug delivery system (SNEDDS) of capsanthin in order to improve its aqueous solubility and rate and extent of dissolution.

Methods

Solubility studies: Solubility of capsanthin in various oils, surfactants and co-surfactants was determined by shake flask method.

Construction of ternary phase diagram: The ternary phase diagram was constructed for Captex 300, Cremophor RH 40 and Capmul MCM by dilution method .

Preparation of SNEDDS with capsanthin:

Captex 300, Cremophor RH 40, Capmul MCM and BHT (0.5%) in different ratios

↓

mixed for 15 min

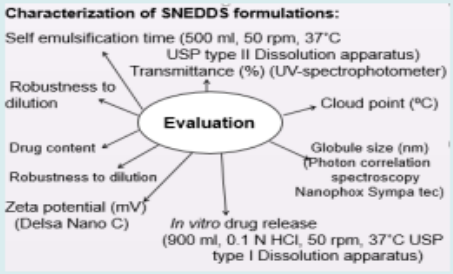
↓

30 mg capsanthin was dissolved by warming and sonication.

↓

Formulations were observed for isotropicity and were stored at 2-8°C until further use.

Characterization of SNEDDS formulations:



Results

Solubility studies

Oil	Solubility (mg/ml)	Surfactant	Solubility (mg/ml)
Captex 300	74.4±1.45	Cremophor RH 40	0.42±0.24
Castor oil	55.14±1.62	Solutol HS 15	0.18±0.11
Co-Surfactant	**Solubility (mg/ml)**	K-TPGS	2.45±1.09
Capmul MCM	23±0.74		

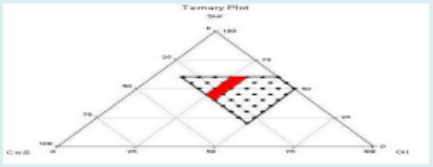


Figure 1. Ternary phase diagram of Captex 300, Cremophor RH 40 and Capmul MCM

Evaluation of SNEDDS

F-code	Cloud point (°C)	Globule size (nm)	Zeta potential (mV)	Drug content (%)
F1	79±0.81	46.37	-2.72	99.22±0.45
F2	71.5±2.87	137.24	-1.38	97.36±0.57
F6	81±1.63	41.77	-9.81	101.04±0.56
F7	74±2.06	99.17	-0.93	96.36±0.69
F8	76.5±1.25	70.86	-8.44	98.24±0.66
F9	72±1.63	234.81	-1.53	99.06±0.74

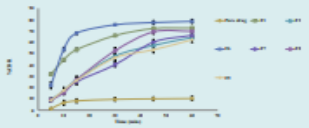


Figure 2. *In vitro* drug release study of pure drug and SNEDDS formulations

Conclusion

SNEDDS of capsanthin prepared using optimized concentration of Captex 300, Cremophor RH 40, Capmul MCM showed remarkably enhanced solubility and dissolution rate as compared to pure drug.

References

1. Date. et al. "Design and evaluation of self-nanoemulsifying drug delivery systems (SNEDDS) for cefpodoxime proxetil." International Journal of Pharmaceutics 329 (2007).
2. Maoka. et al. "Cancer chemopreventive activity of carotenoids in the fruits of red paprika Capsicum annuum L." Cancer Letters172 (2001).

Title- Development of anti-dandruff gel formulation of fenugreek leaves extract

P-065

DEVELOPMENT OF ANTI-DANDRUFF GEL FORMULATION OF FENUGREEK LEAVES EXTRACT

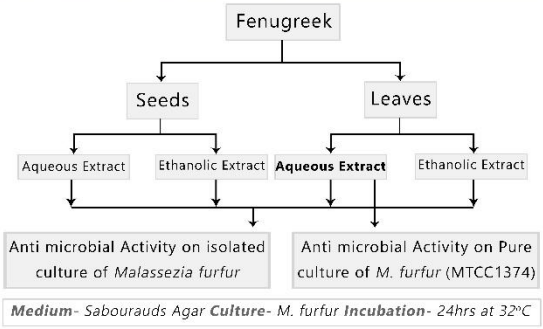
Mr. Khadkikar N.J., Dr. (Mrs.) Kulkarni M C, Mrs. Hastak V, Mr. Jadhav V S,
SCES Indira College of Pharmacy, Niramay, New Mumbai-Pune Highway, Tathawade, Pune, Maharashtra, India. 411033

INTRODUCTION

AIM

To develop Fenugreek based formulation for the treatment of dandruff.

PREPARATION OF EXTRACTS



Medium- Sabourauds Agar ***Culture***- M. furfur ***Incubation***- 24hrs at 32°C

EVALUATION OF EXTRACTS

A. ZOI shown by aqueous and ethanolic extract of fenugreek leaves on isolated and pure cultures MTCC1374 culture of *M.Furfur.*

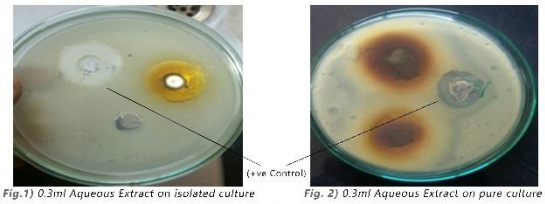


Fig.1) 0.3ml Aqueous Extract on isolated culture *Fig. 2) 0.3ml Aqueous Extract on pure culture*

B. Qualitative analysis (Phytochemical evaluation)

Test	Inference
Molisch test	Carbohydrates present
Ninhydrin test	Amino acids present
Biuret test	Proteins present
Dragendroff test	Alkaloids present
Flavanoid test	Flavanoids pesent

C. Quantitative analysis (Total Flavonoid Contents)

- The crude aqueous extract yielded the highest total flavonoid content(22.85±2.47µg/ml)
- Quercetint was used as standard

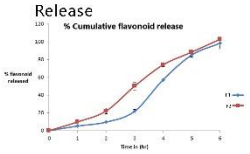
FORMULATION DEVELOPMENT

A. Selection of gelling agent- Cellulose derivatives like various grades of HPMC, HPC, Sodium CMC, Chitosan, **Na Alginate**, Carbopol etc

EVALUATION OF ANTI-DANDRUFF GEL FORMULATIONS

Ingredients	F1	F2
Fenugreek extract	20	30
Sodium alginate	2.5	2.5
Glycerine	8	8
Propyl paraben	0.1	0.1
Methyl paraben	0.2	0.2
Citronella	0.2	0.2
Purified water	qs100	qs100

A. Cumulative Flavonoid Release



B. Evaluation of anti-dandruff gel formulations

Sr.no	Formulation	pH	Viscosity (cps)	Spreadability (gm/cm²)	Assay of gel %
1	F1	6.62	7425	5.0833	98.48-2.60
2	F2	6.21	7444	2.0458	93.77-1.25

C. Anti-dandruff activity of gel formulations.

Fig.3) Formulation F1 (With Oil overlay)

Fig.4) Formulation F2 (With Oil overlay)

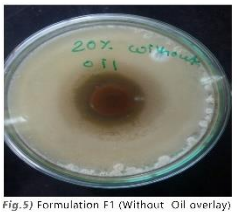


Fig.5) Formulation F1 (Without Oil overlay)

Fig.6) Formulation F2 (Without Oil overlay)

CONCLUSION

- The formulated gel (F2) using (2.5%) sodium alginate as a gelling agent and 30% aqueous extract showed effective viscosity, spreadability, assay, flavonoid release properties along with good zone of inhibition in both the method (with and without overlay of oil)
- Aqueous extract of the *Trigonella foenum graecum L.* showed anti-dandruff activity against *Malassezia furfur.*
- Aqueous extract of *Trigonella foenum graecum L.* was incorporated in to gel formulation showed promising anti-dandruff activity.

REFERENCES

- Pasricha V, Gupta R "Nutraceutical potential of Methi (*Trigonella foenum graecum L.*) and Kasurimethi (*Trigonella corniculata L.*)", Journal of pharmacognosy and phytochemistry; 3(4); 47-57 (2014).
- Pingili M, Vanga S, et al "Antifungal activity of plant extracts against dandruff causing organism *Malassezia furfur*", International journal of bioassay; 5.11:5047-5049 (2016).

Title- Ivrt of acyclovir semisolid formulations using immersion cells: study of effect of test and formulation variables

IVRT OF ACYCLOVIR SEMISOLID FORMULATIONS USING IMMERSION CELLS: STUDY OF EFFECT OF TEST AND FORMULATION VARIABLES

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Keywords: Acyclovir, Immersion Cells, IVRT, semisolids

Aim: The aim of the present work was to study the impact of test and formulation variableson in vitro release of acyclovir from its semisolid formulations employing Immersion Cells.

Objectives- 1. Study of variables like membrane, stirring rate, media volume, temperature, and size of Immersion cells on in vitro release of acyclovir from the innovator cream formulation2. Study of impact of formulation variables such as solvent concentration, method of preparation, consistency, cosolvent concentration on in vitro release of acyclovir 3. Comparison of acyclovir release from various marketed formulations using the optimized IVRT method

Methodology: Immersion Cells ™ type A were used for optimizing IVRT method of acyclovir topical formulations. The USP Apparatus Type 2 (Electrolab EDT 081x) equipped with flat bottom 200 ml capacity flasks and mini spin paddleswas used in the study. Alkaline borate buffer pH 9.2 was chosen as a receptor fluid. Effect of following variables was assessed on the release of acyclovir from its marketed cream formulation (Acivir®- Cipla). Membrane type - Durapore™/Nitrocellulose/ Fluropore™; Media volume- 150 mL/200 mL, Media temperature – 32° C/ 37° C, Paddle speed – 50/100/150 RPM, Immersion cell size- 0.5/2/4 cm^2. Different formulations prepared with changes in the compositions were F1 with same formula as marketed one (Acivir-Cipla), F2 with the same formula but without the homogenization step, F3 without the use of solvent (Propylene glycol), F4- with higher solvent conc., F5-with altered composition of oil phase, F6 & F7- with polyethylene glycol 200 & 4000 respectively as solvents instead of propylene glycol. All the formulations were subjected to IVRT using Nitrocellulose membrane, 200 mL of the borate buffer maintained at 32° C and agitated at the rpm of 150. The cream was loaded in the immersion cell of 2 cm^2 and the study was performed for 6 h duration with withdrawal of 5 mL aliquots at 0.25, 0.5, 1, 2, 4 and 6 h intervals. Equal volume of the fresh receptor fluid was replaced at every sampling interval. The in vitro drug release rate was computed. Various marketed formulations of acyclovir were subjected to the IVRT using the method mentioned above. The release rates were compared statistically by one-way ANOVA at $p \leq 0.05$ using Graphpad prism software (version)

Results: Nitrocellulose membrane showed greater release of the drug compared to Durapore and Fluoropore. With the increase in the agitation speed from 50 to 100 to 150, the amount of acyclovir release increased linearly. Temperature of the receptor fluid had a significant impact on the release of the drug with higher temperature showing greater release. Media volume of 150 mL showed greater release per mL as compared to 200 mL owing to lesser dilution. As the cell size increased, the drug release also increased proportionately. The media volume of 200 mL at 32°C with 150 rpm paddle speed and cell size of 2 cm^2 employing Nitrocellulose membrane was considered as the optimum method for further studies.

Title- Chrono modulated delivery system of metoclopramide hydrochloride: an effective therapy for gastric paresis and morning sickness

P 124

CHRONOMODULATED DELIVERY SYSTEM OF METOCLOPRAMIDE HYDROCHLORIDE: AN EFFECTIVE THERAPY FOR GASTRIC PARESIS AND MORNING SICKNESS

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Email: roopalsbhat@gmail.com

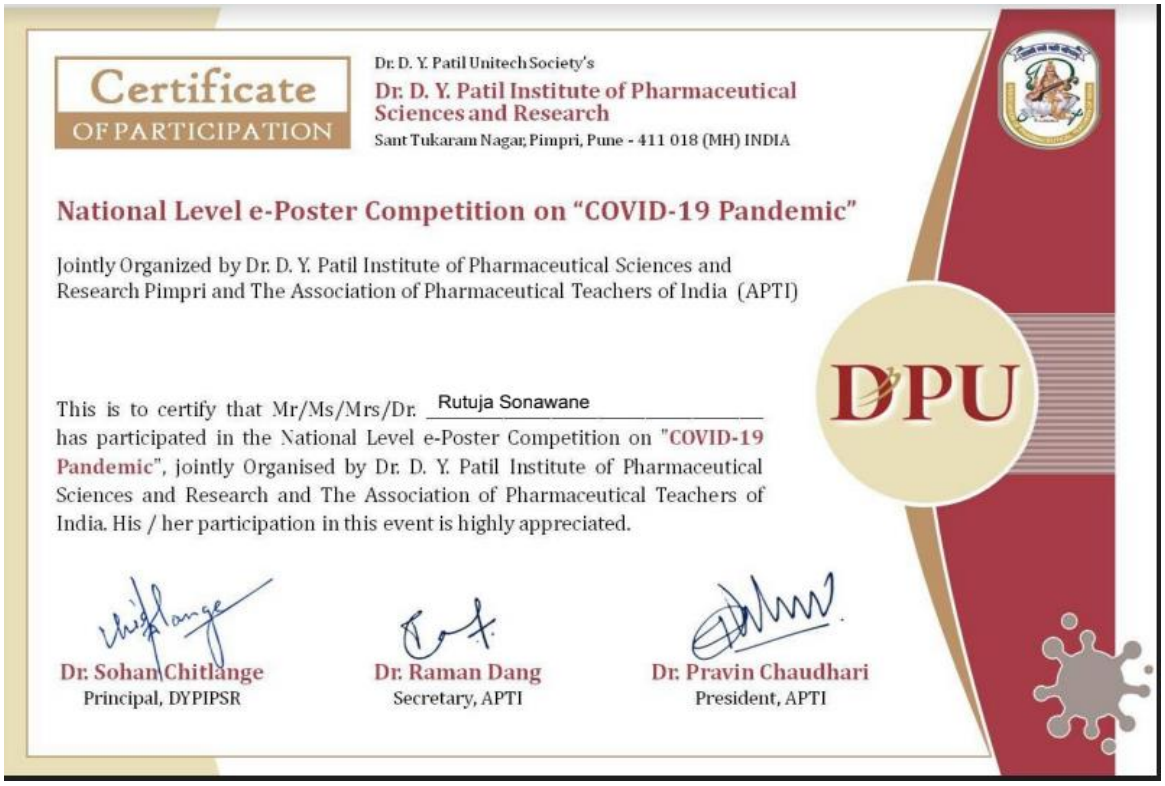
Keywords: chronomodulated delivery, metoclopramide hydrochloride, gastric paresis, morning sickness, optimization

Aim: The aim of the study was to develop and evaluate chronomodulated delivery system of metoclopramide hydrochloride which could be used to combat early morning gastroesophageal reflux in pregnant women and prevent the symptoms of gastroparesis in diabetic patients.

Objectives: The objective of the current study were 1) Development of chronomodulated tablet formulation of metoclopramide hydrochloride using compression coating technique 2) Formulation optimization using design of experiments (DoE) approach. 4) Evaluation of the optimized formulation by in vivo studies.

Methodology: Core tablets of metoclopramide hydrochloride comprising lactose, microcrystalline cellulose, crospovidone were prepared using direct compression technique. The resulting tablets were subjected to evaluation of assay, content uniformity, disintegration time, in vitro drug release. Glyceryl dibehenate and hydrogenated castor oil, both chemically inert and highly compatible lipids were used in combination with dicalcium phosphate for the preparation of compression coating layer. The levels of glyceryl dibehenate, hydrogenated castor oil and dicalcium phosphate were optimized statistically using face centered cubic design to achieve the desired *in-vitro* drug release profile. Design Expert software 8.05 (Stat- Ease Inc., Mineapolis, MN, USA) was used for this purpose. Each factor was studied at 3 different levels (-1, 0 and +1). The targets set for response variables were NMT 10% drug release in 4 h, NLT 50% drug release in 4.5 h and NLT 85% release in 5 h. The formulation was prepared using the optimized formula suggested by the software and analyzed for the response parameters. The closeness of the actual response was compared with the theoretical response suggested by the software. The tablets were prepared in larger bulk as per the optimized formula and subjected to hardness, thickness, disintegration time and *in-vitro* release studies over the physiological pH range and stability studies. In vivo pharmacokinetic studies were performed for the formulation in the fasting as well as fed state in 12 healthy human volunteers. Reglan® tablets (10 mg strength) were used as the reference product. The parameters such as Cmax, Tmax and AUC were computed from log plasma drug concentration time profiles and subjected to determination of bioequivalence.

Title- Repurposing Drugs for the COVID-19: A New Perspective



Certificate
OF PARTICIPATION

Dr. D. Y. Patil Unitech Society's
Dr. D. Y. Patil Institute of Pharmaceutical Sciences and Research
Sant Tukaram Nagar, Pimpri, Pune - 411 018 (MH) INDIA

National Level e-Poster Competition on "COVID-19 Pandemic"

Jointly Organized by Dr. D. Y. Patil Institute of Pharmaceutical Sciences and Research Pimpri and The Association of Pharmaceutical Teachers of India (APTI)

This is to certify that Mr/Ms/Mrs/Dr. Rutuja Sonawane has participated in the National Level e-Poster Competition on "COVID-19 Pandemic", jointly Organised by Dr. D. Y. Patil Institute of Pharmaceutical Sciences and Research and The Association of Pharmaceutical Teachers of India. His / her participation in this event is highly appreciated.

DPU

Dr. Sohan Chitlange, Principal, DYPIPSR
Dr. Raman Dang, Secretary, APTI
Dr. Pravin Chaudhari, President, APTI

Title- Effect of borneol on permeability of BCS Class III drug in self nanoemulsifying drug delivery system

P-043

EFFECT OF BORNOEL ON PERMEABILITY OF A BCS CLASS III DRUG IN SELF NANOEMULSIFYING DELIVERY SYSTEM.

Gadre T[1]., Kulkarni M[2]., Bhat R[2].
[1]Bombay College of Pharmacy, Kalina, Santa Cruz (E), Mumbai-400098, India
[2]Niramay, S.No. 89/2 A, SCES's Indira College of Pharmacy, New Pune Mumbai Highway, Tathawade, Pune, Maharashtra-411033, India
Email: tjtejashri2522@gmail.com

Keywords: SNEDDS, acyclovir, borneol, *ex vivo* permeation, P-gp substrate

Aim: To evaluate the effect of bornoel on permeability of a BCS class III drug in self nanoemulsifying delivery system.
Objectives: 1.Development of SNEDDS of acyclovir alone and in conjunction with borneol (BO).
2. *Ex-vivo* permeability studies of acyclovir SNEDDS in presence and absence of borneol using goat and chicken ileum.
Methodology: SNEDDS were formulated by mixing of Captex 300® (oil), Cremophor RH 40 (a non-ionic surfactant) and Capmul® MCM (co-surfactant) in a vial followed by bath sonicating the mixture for 10min. BO was incorporated into the SNEDDS formulation in various concentrations and resulting formulations were named as BO3 (containing 300 mg of BO in 2.5g of SNEDDS), BO6 (600 mg in 2.5g of SNEDDS) and BO8 (800 mg in 2.5g of SNEDDS). HPLC method was developed for analyzing acyclovir during *ex vivo* permeation studies. The *ex vivo* permeability studies were performed by non-everted gut sac technique using goat and chicken ileum. The method was validated for a low permeation model drug, amoxicillin trihydrate and the studies were conducted on USP type II apparatus with 300mL of the tyrode solution maintained at 37°C. RPM was set to 25 and aeration was maintained at 1bubble/sec. *Ex vivo* permeation of pure drug, drug incorporated in SNEDDS formulation and the drug incorporated in BO3, BO6 and BO8 formulations were compared.
Results and discussions: The *ex vivo* permeation of the model drug at the end of 3 hours was found to be 17% and 1.6% from goat and chicken ileum respectively. This low permeation indicated the established method is suitable for low permeation drug. The permeation results as shown in table indicates that SNEDDS in absence of BO was unable to enhance the permeation of acyclovir when compared with neat acyclovir solution whereas formulations BO6 and BO8 containing BO showed better drug permeation in both goat and chicken ileum models. Better drug permeation in goat model as compared to chicken model could be attributed to the greater diameter of goat ileum and thinner wall unlike chicken ileum. This indicated that different animal models show substantial difference in permeability and resulting bioavailability. % Permeation at the end of 3 hours

Goat ileum	Acv solution	Acv in SNEDDS	Acv in borneol
BO3 formulation	45.25± 0.63	38± 0.43	35± 5.56
BO6 formulation	20.15± 0.089	13.02± 1.37	29.03± 4.30

Title- Pharmaceutical intellectual property rights: Current Perspective of Modern India

Title- To compare quality of granules of Ibuprofen obtained from super gran™ and rapid mixer granulator

P-140

TO COMPARE QUALITY OF GRANULES OF IBUPROFEN OBTAINED FROM SUPER GRAN™ AND RAPID MIXER GRANULATOR

Bansude K., Kulkarni M., Bhondve D.
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Email: kiranbansude99@gmail.com

Keywords: Ibuprofen, Super Gran ™, Rapid Mixer Granulator

Introduction: Super Gran™ is a mixer cum granulator developed and patented by Gansons Ltd which is characterized by presence of multiple stacked impellor blades and two scrappers. The special design of the granulator is expected to enhance the speed of dry mixing, wet granulation and wet milling compared to rapid mixer granulator. This technology is expected to enhance the uniformity of granulation.
Aim: The aim of the present study was to compare quality of granules of ibuprofen (ibu) prepared in Super Gran™ and rapid mixer granulator (rmg).
Objectives: 1.To prepare ibu granules using various diluents and granulating agents in Super Gran ™ and rmg 2. To compare the granules obtained from both the granulators 3. To compare tableting characteristics of both the granules **Methodology:** Ibu granules were prepared by wet granulation technique using various trial compositions.(Table 1)For each composition, dry mixing and wet granulation were carried out in rmg (Bectochem)and Super Gran™. The resulting granules were compared for flow properties, proportion of fines and morphology. The granules were compressed into tablets using 12mm s/c circular plain punches (Rimek, Karnavati). The tablets were evaluated for appearance, weight variation, hardness, friability, disintegration time. *In vitro* release profiles (conducted as per USP monograph) were compared using Student's t test. 2^2 Full Factorial design was used for optimization trials of ibu tablets in both SuperGran™ and rmg. Independent variables chosen were concentration of binders (maize starch and PVP K-30). The response variables were disintegration time (<3 mins) and *in vitro* release (not less than 80% within 60 mins). Total 7 trial runs (A1-A7 and S1-S7) suggested by Design Expert Software® (Version 11) were processed in both the granulators, granules were compressed and the tablets were evaluated for all the earlier mentioned parameters.

Ingredients	Quantity in mg/tab				
	R1/S1	R2/S2	R3/S3	R4/S4	R5/S5
Dry Mixing					
Ibuprofen	400	400	400	400	400
Lactose	26	-	115	-	-
Microcrystalline Cellulose	88	-	-	-	-
Croscarmellose Sodium	16.2	-	-	18	-
Povidone K-30	-	-	-	-	18

Binder Preparation	R1/S1	R2/S2	R3/S3	R4/S4	R5/S5
Povidone K-30	27.27	-	-	-	-
Starch maize	-	31	-	43.7	43.70
Purified water	q.s	q.s	q.s	q.s	q.s
Starch dried	-	40	-	40	40
Aerosil 200	2.5	7.45	-	7.45	7.45
Extragranular	R1/S1	R2/S2	R3/S3	R4/S4	R5/S5
Stearic acid	-	1.50	-	1.50	1.50
Magnesium stearate	5	4.50	1.1	4.50	4.50
Sodium lauryl sulphate	2.5	-	-	-	-

CRS
Indian Local Chapter

Certificate

18th International Symposium
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This is to certify that

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Dr. Vandana Patravale
Vice-President, CRS-Indian Chapter

Dr. Parizad Elchidana
President, CRS-Indian Chapter

Title- Development and characterization of pegylated liposomes for oral delivery of insulin

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This is to certify that **MS. NITISHA SONI,** Assistant Professor,
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presented work in an oral session entitled ***Development and charaterization of pegylated liposomes for oral delivery of insulin***
in AICTE-sponsored Two-days E-conference on
"Translational Research for Nanomedicine" held on 22nd and 23rd April, 2022
organized by Indore Institute of Pharmacy, Indore.

Dr. Pankaj Dixit
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PRINCIPAL - IIP
Co-ordinator

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Title - Application of dissolution for evaluation of taste masking effect of Primaquine Phosphate complex developed with ion exchange resins

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OF PRESENTATION

PROUDLY PRESENTED TO

Dr. Manasi Wagdarikar

from SCES's Indira College of Pharmacy, Pune for oral presentation of the research work at DRPI 2021 - Online. Category: M.Pharm research Title: Application of Dissolution for Evaluation of Taste Masking Effect of Primaquine Phosphate Complex Developed with Ion Exchange Resins Co-authors: Dr. Madhur Kulkarni, Ms. Tejashree Gagare

Saranjit Singh
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Zone: West Zone Category: M.Pharm research

In vitro Release Studies of Conventional & Novel Dosage Forms, including Herbals, Nutraceuticals & Cosmeceuticals

Application of Dissolution for Evaluation of Taste Masking Effect of Primaquine Phosphate Complex Developed with Ion Exchange Resins

Manasi Wagdarikar[1] (mansi.wagdarikar@indiraicp.edu.in), Madhur Kulkarni, Tejashree Gagare

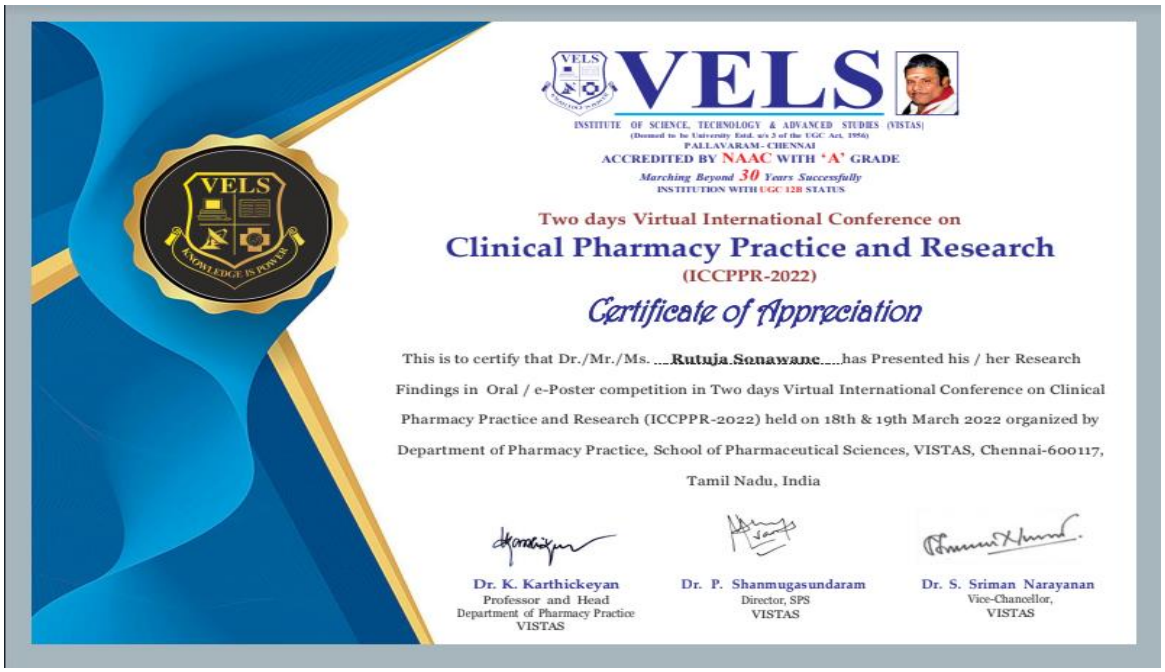
[1]SCES's Indira College Of Pharmacy, Pune, Maharashtra

Background and Rationale: Taste masking of primaquine phosphate (PP) using ion exchange resins (IERs) and subsequent solid oral formulation development was carried out. A simple and reliable *in-vitro* dissolution testing was employed to evaluate taste masking capability by quantifying release of the drug in simulated salivary fluid (SSF). Human sensory panel is usually employed to evaluate palatability of oral formulations. However, the use of human volunteers could involve ethical issues and higher costs. Electronic tongue, an alternative *in vitro* option is convenient, but it comes with a disadvantage of non-reproducibility owing to sensitivity to smallest environmental changes. Dissolution testing to potentially predict or quantify the effect of the taste masking is a simple, cost-effective, facile approach that can be used during the early stages of formulation development, optimization as well as a QC tool during commercial manufacturing of a taste masked formulation[1]. The current work involved taste masking of a highly bitter drug, PP using a popular and commercially viable approach of complexation with ion exchange resins (IERs). Dissolution testing was used as a tool to evaluate the taste masking efficiency of the complexes.

Methodology: PP and cation exchange resins namely IER 64, IER 69 and IER 88 (Amberlite IRP 64, 69 and 88 resp.) were subjected to complex formation in 1:1 and 1:2 weight ratios using shake flask method at ambient temperature. The resulting drug resin complexes (resinates) were filtered and dried at 50°C and the filtrate was evaluated for uncomplexed drug. The resinates were subjected to evaluation of drug loading and *in vitro* drug release studies. USP type II apparatus was employed and 900 ml of buffer (0.1N HCl containing 30% 2M NaCl) maintained at 37°C, stirred at 50 rpm was used as a dissolution medium. Resinates containing PP and IER 69 in 1:2 ratio {Resinate 69(1:2)} equivalent to 15 mg dose of primaquine was added to 10 ml of simulated salivary fluid (SSF) maintained at 37°C under gentle agitation. Aliquots (150 µl) were withdrawn at 15, 30, 45, 60 and 120 sec and analyzed for free PP concentration using validated RP-HPLC. The resinate was further formulated into orally disintegrating tablets using excipients like Pearlitol, Startab,Starch1500, Prosolv, Pruv and vanilla flavor. The tablets were subjected to *in vitro* drug release studies using aforementioned conditions.

Results & Discussion: *In vitro* drug release from resinate 69 (1:2) was found to be more than 88% within 1h indicating that complexation did not affect the drug release and would allow quick dissolution of drug in gastric fluid leading to its faster absorption. The resinate showed <0.5% drug release in SSF at the end of 2minutesof study period. This indicated excellent *in vitro* taste masking efficiency of the resinate. Optimized orally disintegrating tablet formulation of the resinate exhibited more than 90% drug release within an hour.

Title - Molecular docking,ADMET study & computational investigation of 1,5-diphenyl-2,4-disubsituted-1H-Imidazole.



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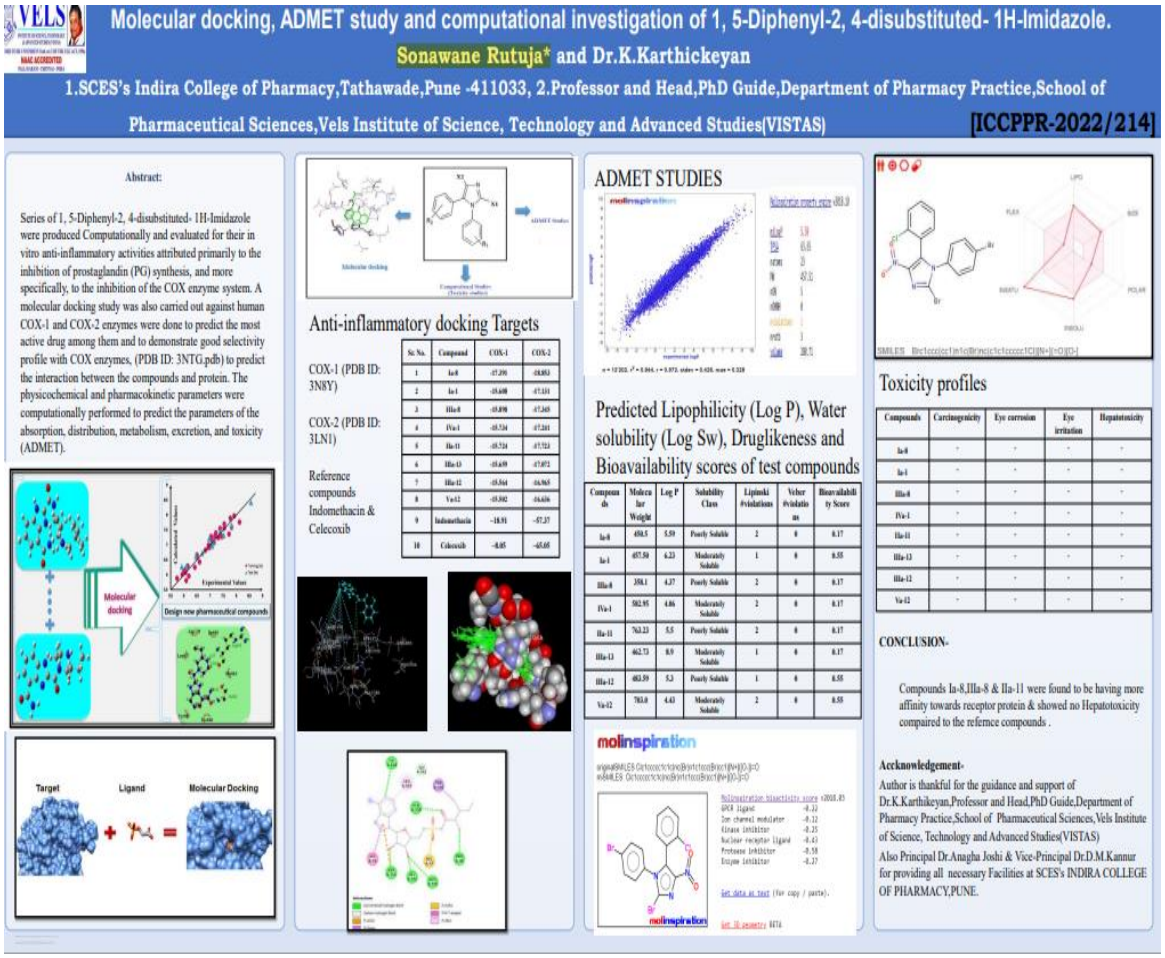

Molecular docking, ADMET study and computational investigation of 1, 5-Diphenyl-2, 4-disubstituted- 1H-Imidazole.

Sonawane Rutuja* and Dr.K.Karthickeyan

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[ICCPPR-2022/214]

Abstract:

Series of 1, 5-Diphenyl-2, 4-disubstituted- 1H-Imidazole were produced Computationally and evaluated for their in vitro anti-inflammatory activities attributed primarily to the inhibition of prostaglandin (PG) synthesis, and more specifically, to the inhibition of the COX enzyme system. A molecular docking study was also carried out against human COX-1 and COX-2 enzymes were done to predict the most active drug among them and to demonstrate good selectivity profile with COX enzymes, (PDB ID: 3NTG.pdb) to predict the interaction between the compounds and protein. The physicochemical and pharmacokinetic parameters were computationally performed to predict the parameters of the absorption, distribution, metabolism, excretion, and toxicity (ADMET).

Molecular docking

Design new pharmaceutical compounds

Target + Ligand = Molecular Docking

Anti-inflammatory docking Targets

COX-1 (PDB ID: 3N8Y)

COX-2 (PDB ID: 3LN1)

Reference compounds Indomethacin & Celecoxib

Sr. No.	Compound	COX-1	COX-2
1	Ia-8	-17.291	-18.053
2	Ia-1	-15.608	-17.131
3	IIIa-8	-15.898	-17.345
4	IVa-1	-15.724	-17.241
5	IIa-11	-15.724	-17.724
6	IIIa-13	-15.639	-17.972
7	IIIa-12	-15.564	-16.965
8	Va-12	-15.502	-16.636
9	Indomethacin	-18.91	-17.27
10	Celecoxib	-8.05	-15.05

ADMET STUDIES

Predicted Lipophilicity (Log P), Water solubility (Log Sw), Druglikeness and Bioavailability scores of test compounds

Compounds	Molecular Weight	Log P	Solubility Class	Lipinski #violations	Veber #violations	Bioavailability Score
Ia-8	450.5	5.59	Poorly Soluble	2	0	0.17
Ia-1	457.50	6.23	Moderately Soluble	1	0	0.55
IIIa-8	358.1	4.37	Poorly Soluble	2	0	0.17
IVa-1	502.95	4.86	Moderately Soluble	2	0	0.17
IIa-11	763.23	5.5	Poorly Soluble	2	0	0.17
IIIa-13	462.73	0.9	Moderately Soluble	1	0	0.17
IIIa-12	483.59	5.3	Poorly Soluble	1	0	0.55
Va-12	783.0	4.43	Moderately Soluble	2	0	0.55

molinspiration

Toxicity profiles

Compounds	Carcinogenicity	Eye corrosion	Eye irritation	Hepatotoxicity
Ia-8	-	-	-	-
Ia-1	-	-	-	-
IIIa-8	-	-	-	-
IVa-1	-	-	-	-
IIa-11	-	-	-	-
IIIa-13	-	-	-	-
IIIa-12	-	-	-	-
Va-12	-	-	-	-

CONCLUSION-

Compounds Ia-8,IIIa-8 & IIa-11 were found to be having more affinity towards receptor protein & showed no Hepatotoxicity compaired to the refernce compounds .

Aecknowledgement-

Author is thankful for the guidance and support of Dr.K.Karthikeyan,Professor and Head,PhD Guide,Department of Pharmacy Practice,School of Pharmaceutical Sciences,Vels Institute of Science, Technology and Advanced Studies(VISTAS)

Also Principal Dr.Anagha Joshi & Vice-Principal Dr.D.M.Kannur for providing all necessary Facilities at SCES's INDIRA COLLEGE OF PHARMACY,PUNE.