



DEPARTMENT OF PHARMACOLOGY & TOXICOLOGY

College of Veterinary Science & Animal Husbandry

Navsari Centre (Kamdhenu University), Gandhinagar

Eru Char Rasta, Vijalpore, Ta: Jalalpore, Dist. Navsari - 396450



Teaching Faculty in Department

Sr. No.	Name	Designation	Contact Details	Joining Year in NAU	Qualification	Total Experience	Publications Research Papers
1	Dr. R. D. Varia	Assistant Professor & Head	9998949714 rdvaria@kamdhenuuni.edu.in	2010	Ph.D.	11 Years	Research Paper:34 Chapters in book:05
2	Dr. J. H. Patel	Assistant Professor	9428489543 jhpatel@kamdhenuuni.edu.in	2010	Ph.D.	11 Years	Research Paper:59 Chapters in book:04
3	Dr. Falguni Modi	Assistant Professor	7600049181 fdmodi@kamdhenuuni.edu.in	2011	Ph.D.	12 Years	Research Paper:22 Chapters in book:03

About the Department

Veterinary Pharmacology and Toxicology is considered a bridge between basic and clinical Veterinary Science subjects. In the new millennium, there has been great emphasis towards developing animal specific drugs for the unique indication and improving basic pharmacology knowledge. In this direction, the Department of Pharmacology and Toxicology was established as a part of College of Veterinary Science and Animal Husbandry, Navsari.

RESEARCH:

- **GOG Plan Scheme (Running):** Evaluation and Validation of Antimicrobial and Anti-inflammatory Activity of Medicinal Plants Used by Vanbandhus of South Gujarat (From June-2012 to continue)

- **Departmental research schemes (Completed):**

1. Evaluation of Antibacterial Efficacy of *Ossimum basclicum* (Damro) of South Gujarat.
2. Evaluation of Antibacterial Efficacy of *Cassia fistula* (Garmalo) of South Gujarat.
3. Studies on Pharmacokinetics and Pharmacodynamic relationship of Cefpriome in Cow Calves.
4. Studies on Pharmacokinetics and Pharmacodynamic relationship of Cefpriome in Goats.
5. Studies on Pharmacokinetics and Pharmacodynamic relationship of Cefquinome in Cow Calves.
6. Studies on Pharmacokinetics and Pharmacodynamic relationship of Cefquinome in Goats.
7. Evaluation of in vitro antimicrobial properties of endophytes isolated from medicinal plants Terminalia bellirica (Baheda) and Bixa orellana (Sindur/Annatto seed)
8. Evaluation of in vitro pharmacological activity of Morus alba.
9. Studies of pharmacokinetic and pharmacodynamics integration of andogropholide in rats.
10. Formulation and in-vitro evaluation of quercetin loaded micro emulsion for pharmacological properties
11. Evaluation of in vitro antibacterial effect of Linalool combined with Enrofloxacin, Gentamicin and Ceftriaxone
12. Evaluation of in vivo anti-inflammatory and antibacterial activities of Ellagic acid following intramuscular administration in albino rats

Publications:

- ***Book/Compendium:***

1. Bhavsar S.K., Varia R.D., Patel J.H., Modi F.D. and Kelawala N.H. (2012). Guide to responsible and prudent use of antimicrobial for Veterinarian. Published by Department of Pharmacology & Toxicology, College of Veterinary Science & Animal Husbandry, NAU, Navsari.

2. Bhavsar S.K., Gopal Puri, Patel J.H., Gupta Swati and Prajapati Kamin (2016). Vetsmruti. Published by Vanbandhu Veterinary College, NAU, Navsari: Vol. 1.
 3. Bhavsar S.K., Varia R.D., Patel J.H. and Modi F.D. (2016). Compendium of Invited papers and abstracts published by Department of Pharmacology & Toxicology, College of Veterinary Science & Animal Husbandry, NAU, Navsari.
 4. Bhavsar S.K., Marvania T.G., Gohel D.P., Posia R., Varia R.D., Patel J.H. and Modi F.D. (2016). Workshop manual on “Animal Welfare and Alternatives to Animals in Education and Research” published by Department of Pharmacology & Toxicology, College of Veterinary Science & Animal Husbandry, NAU, Navsari.
- **Chapter in Book:**
 1. Dr. S. K. Bhavsar written a chapter entitled “Pharmacokinetics of Antimicrobials in Food Producing Animals” in a book entitled “Readings in Advanced Pharmacokinetics – Theory, Methods and Applications” Ayman Nooredin (ed). Intech open access publisher, Croatia. PP: 157-178.
 2. Patel J.H., Varia R.D. and Vihol P.D. (2021). “General and Systemic Pharmacology” in book entitled “Multiple Choice Questions in Veterinary Science” published by Biotech Books (ed.) New Delhi. Pp: 505-517.
 3. Patel J.H., Varia R.D. and Vihol P.D. (2021). “Veterinary Neuropharmacology” in book entitled “Multiple Choice Questions in Veterinary Science” published by Biotech Books (ed.) New Delhi. Pp: 518-530.
 4. Patel J.H., Varia R.D. and Vihol P.D. (2021). “Veterinary Chemotherapy” in book entitled “Multiple Choice Questions in Veterinary Science” published by Biotech Books (ed.) New Delhi. Pp: 531-543.
 5. Patel J.H., Varia R.D. and Vihol P.D. (2021). “Veterinary Toxicology” in book entitled “Multiple Choice Questions in Veterinary Science” published by Biotech Books (ed.) New Delhi. Pp: 544-558.
 - **Research Papers:**
 1. Patel J.H., Vihol P.D., Patel U.D., Bhavsar S.K. and Thaker A.M. (2013). Pharmacokinetics of Levofloxacin following subcutaneous administration in goat. Journal of Veterinary Pharmacology and Toxicology. 12(1-2): 35-38.

2. Patel R.B., Bhavsar S.K., Solanki P.F., Patel J.H., Varia R.D., Modi F.D. and Patel M.D. (2013). Pharmacokinetics of Cefpirome following intravenous and intramuscular administration in cow calves. *Science international*. 1(11): 371-374.
3. Solanki P. F., Patel R. B., Bhavsar S. K., Patel J. H., Varia R. D., Modi F. D. and Sorathiya L.M. (2014). Pharmacokinetics of cefpirome following intramuscular injection in goats. *Journal of Vet. Pharmacol. & Toxicol.* 13(1): 19-22.
4. Patel J.H., Vihol P.D., Patel U.D., Varia R.D., Bhavsar S.K. and Thaker A.M. (2015). Effect of ketoprofen co-administration and febrile state on pharmacokinetic of levofloxacin in goats. *J. of Vet. Pharmacol. Toxicol.* 14(1): 22-25.
5. Tiwari Shireen, Bhavsar S.K., Patel R.L., Patel J.H., Varia R.D., Modi Falguni D. and Tyagi K.K. (2015). Effect of meloxicam co-administration and febrile state on pharmacokinetic of cefquinome in goats. *J. of Vet. Pharmacol. Toxicol.* 14(2): 8-11.
6. Patel R.L., Bhavsar S.K., Tiwari Shireen, Patel J.H., Varia R.D. and Modi Falguni (2016). Effect of meloxicam co-administration on pharmacokinetic of cefquinome in cow calves. *J. of Vet. Pharmacol. Toxicol.* 15(2): 84-86.
7. Solanki Tamanna H., Patel J.H., Varia R.D., Bhavsar S.K., Vihol Priti D. and Modi Falguni D. (2016). In vitro release and pharmacokinetics of enrofloxacin PHBV microsphere in rats. *International Journal of Science, Environment and Technology*, 5(4): 2522 – 2531.
8. Gondaliya Vaishali, Patel J.H., Varia R.D., Bhavsar S.K., Vihol P.D. and Modi F.D. (2017). Pharmacokinetics and anti-inflammatory activity of andrographolide in rats. *Int. J. Curr. Microbiol. App. Sci.* 6(9): 1458-1463.
9. Gondaliya Vaishali, Patel J.H., Varia R.D., Bhavsar S.K., Vihol P.D., Modi F.D. and Solanki Tamanna (2017). Effect of andrographolide co-administration on pharmacokinetics of meloxicam in rats. *Int. J. Curr. Microbiol. App. Sci.* 6(10): 2147-2153.
10. Modi Falguni D., Bhavsar S.K., Patel J.H., Varia R.D., Modi L.C. and Kale N. (2018). Evaluation of pharmacokinetics, antibacterial and anti-inflammatory activities of chrysin in rat. *Int. J. Curr. Microbiol. App. Sci.* 7(9): 1494-1503.
11. Modi Falguni D., Bhavsar S.K., Patel J.H., Varia R.D., Modi L.C. and Modi Megha (2018). Pharmacokinetic activity of quercetin in rats following single dose intramuscular administration. *Int. J. Curr. Microbiol. App. Sci.* 7(10): 1562-1566.

12. Patel J.H., Vihol P.D., Sadariya K.A., Patel U.D., Varia R.D., Bhavsar S.K. and Thaker A.M. (2018). Effect of ketoprofen co-administration and febrile state on pharmacokinetics of levofloxacin in goats following intravenous administration. *Int. J. Curr. Microbiol. App. Sci.* 7(10): 2477-2483.
13. Varia R.D., Patel J.H., Modi F.D., Vihol P.D. and Bhavsar S.K. (2020). *In vitro* and *in vivo* antibacterial and anti-inflammatory properties of Linalool. *International Journal of current microbiology and applied sciences.* 9(9): 1481-1489.

:: ACHIEVEMENTS ::

AWARD:

Dr. S. K. Bhavsar (Major worker), Dr. J. H. Patel (Co-worker) and Dr. R. D. Varia (Co-worker) were awarded with “**Prof. J. P. Trivedi award**” for research work on “**Pharmacokinetics of Antibacterial drugs in domestic animals**” by Gujarat Association of Agricultural Sciences (GAAS) during 2013.

RECOMMENDATIONS TO SCIENTIFIC COMMUNITY:

1. It is recommended to scientific community that Cefpirome is to be administrated at 10 mg/kg body weight intravenously then repeated at 8 hour interval or intramuscularly at 12 hour interval in cattle and goat.
2. Based on pharmacokinetics and pharmacodynamics relationship of cefquinome in cattle & goat, it is recommended that a dose of 20 mg/kg repeated at 8 h interval after Intravenous and 12 h after Intramuscular administration is sufficient to maintain $T > MIC$ above 60% of dosage interval for bacteria with MIC values $< 0.4 \mu\text{g/ml}$.
3. Ethyl acetate extract of endophytic fungi (*Schizophyllum* spp.) isolated from *Bixa orellana* (Sindur, Annato seeds) leaves possess marked antibacterial activity against *Bacillus subtilis* (0.08 $\mu\text{g/ml}$), *Proteus mirabilis* (0.08 $\mu\text{g/ml}$), *Staphylococcus aureus* (0.16 $\mu\text{g/ml}$), *Pseudomonas aeruginosa* (2.56 $\mu\text{g/ml}$) and *Streptococcus pyogenes* (5.12 $\mu\text{g/ml}$).
4. Ethyl acetate extract of endophytic fungi (*Schizophyllum* spp.) isolated from *Terminalia bellirica* (Baheda) leaves possess marked antibacterial activity against *Staphylococcus aureus* (0.64 $\mu\text{g/ml}$), *Bacillus subtilis* (0.64 $\mu\text{g/ml}$), *Proteus mirabilis* (0.64 $\mu\text{g/ml}$), *Streptococcus pyogenes* (2.56 $\mu\text{g/ml}$), *Pseudomonas*

aeruginosa (2.56 µg/ml), *Escherichia coli* (2.56 µg/ml), and *Salmonella typhimurium* (2.56 µg/ml).

5. Quercetin microemulsion (1 mg/ml) formulation includes 1M NaOH, Tween 80 and Water in the ratio of 0.2:0.2:19.6 showed good antioxidant property with IC50 values 3.75 µg/ml and 791.8 µg/ml in ABTS and DPPH assay, respectively.
6. Combination of Rutin and Enrofloxacin has synergistic action with the concentrations 78.13 and 0.12 µg/ml against *Salmonella Typhimurium*, *Proteus mirabilis* and *Bacillus subtilis* whereas with the concentrations 78.13 and 0.24 µg/ml against *Pseudomonas aeruginosa*.
7. Combination of Rutin and Gentamicin sulfate has synergistic action with the concentrations 78.13 and 3.91 µg/ml against *Escherichia coli* and *Pseudomonas aeruginosa*, with the concentrations 78.13 and 0.98 µg/ml against *Salmonella Typhimurium* and *Streptococcus pyogenes*, with the concentrations 78.13 and 1.95 µg/ml against *Proteus mirabilis* and with the concentrations 78.13 and 7.81 µg/ml against *Staphylococcus aureus*.
8. Combination of Rutin and Ceftriaxone has synergistic action with the concentrations 78.31 and 0.98 µg/ml against *Salmonella Typhimurium* and *Pseudomonas aeruginosa* whereas with the concentrations 78.31 and 1.95 µg/ml against *Streptococcus pyogenes*.
9. Ellagic acid has good anti-inflammatory activity at 75 mg/kg body weight intramuscularly in carrageenan induced rat paw edema model.

Courses offered by the Department (Theory and Practical)

Undergraduate Programme

Sr. No.	Name of Course	Credit
1	UNIT: 1 GENERAL PHARMACOLOGY	4+1
2	UNIT-2 DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM	
3	UNIT-3 DRUGS ACTING ON CENTRAL NERVOUS SYSTEM	
4	UNIT-4 DRUGS ACTING ON DIFFERENT BODY SYSTEMS	
5	UNIT-5 VETERINARY CHEMOTHERAPY	
6	UNIT-6	

VETERINARY TOXICOLOGY

Master Degree Programme

Sr.No.	CODE	COURSE TITLE	CREDITS
1.	VPT 601	GENERAL PHARMACOLOGY	2+0
2.	VPT 602	AUTONOMIC AND AUTACOID PHARMACOLOGY	2+1
3.	VPT 603	CNS PHARMACOLOGY	2+1
4.	VPT 604	DIGESTIVE AND RESPIRATORY PHARMACOLOGY	2+0
5.	VPT 605	CARDIOVASCULAR AND RENAL PHARMACOLOGY	2+0
6.	VPT 606	ENDOCRINE AND REPRODUCTIVE PHARMACOLOGY	2+0
7.	VPT 607	CHEMOTHERAPY	2+1
8.	VPT 608	TOXICOLOGY OF XENOBIOTICS	2+1
9.	VPT 609	TOXICOLOGY OF PLANTS AND TOXINS	2+0
10.	VPT 610	PHARMACOLOGICAL TECHNIQUES	1+1
11.	VPT 611	TECHNIQUES IN TOXICOLOGY	1+1
12.	VPT 612	ETHNOPHARMACOLOGY	2+0
13.	VPT 691	MASTER'S SEMINAR	1+0
14.	VPT 699	MASTER'S RESEARCH	20

Ph.D. Programme


Sr.No.	CODE	COURSE TITLE	CREDITS
1.	VPT 701	ADVANCES IN NEUROPHARMACOLOGY	2+0
2.	VPT 702	AUTACOID PHARMACOLOGY	1+0
3.	VPT 703	PHARMACOLOGY OF HERBAL DRUGS	2+1
4.	VPT 704	DRUG METABOLISM	2+0
5.	VPT 705	MOLECULAR PHARMACOLOGY	2+0
6.	VPT 706	PHARMACOKINETICS	2+1
7.	VPT 707	PHARMACOGENOMICS	2+0
8.	VPT 708	IMMUNOPHARMACOLOGY	1+0
9.	VPT 709	MOLECULAR TOXICOLOGY	2+0
10.	VPT 710	CLINICAL PHARMACOLOGY	1+1
11.	VPT 711	CLINICAL TOXICOLOGY	2+1
12.	VPT 712	ECOTOXICOLOGY	2+0
13.	VPT 713	REGULATORY TOXICOLOGY	2+1
14.	VPT 790	SPECIAL PROBLEM	0+2
15.	VPT 791	DOCTORAL SEMINAR I	1+0
16.	VPT 792	DOCTORAL SEMINAR II	1+0
17.	VPT 799	DOCTORAL RESEARCH	45



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FACULTY PROFILE


Name	Dr. Raseshkumar D. Varia	
Designation	Assistant Professor & Head	
Qualification	Ph.D. (Veterinary Pharmacology)	
Contact No.	9998949714	
Email ID	rdvaria@kamdhenuuni.edu.in	
Joining date	24-06-2010	
Professional Experience	11 Years	
Job profile	Teaching, Research, Extension	
Exams cleared	NET (ASRB, New Delhi)	
	CCC+ (SPIPA, Surat)	
	Hindi Exam – Kovid (Rashtrabhasha Prachar Samiti, Vardha)	
Additional Duties Performed	<ul style="list-style-type: none"> • Member Secretary – IAEC of Veterinary College, Navsari • Convener – Exam Cell of Veterinary College, Navsari • Assistant UGTC & DDO of Veterinary College, Navsari 	
Significant award	Hari Om Ashram Award by GAAS, Ahmadabad (2013)	
Publication	Teaching Manual: 11	Books/Booklets: 5
	Chapters in Book: 9	Lead Papers: 5
	Research Papers: 34	Vernacular Articles: 5
	Abstracts: 38	Scientific Recommendations: 09
Research Scheme	Evaluation and Validation of Antimicrobial and Anti-inflammatory Activity of Medicinal Plants Used by Vanbandhus of South Gujarat (Plan Scheme: Since 2012 till continue) CO-PI	
Departmental Research	AS PI-03; As Co-PI-09	
Competence building	Summer School/Winter School/CAFT/Orientation: 03	
	Seminar/Symposium/Conference: 32	
	Short courses/Training: 03	
Professional Membership	Indian Society of Veterinary Pharmacology & Toxicology (ISVPT)	
	Alumni Association of Veterinary College Anand (AAVCA)	
	All Gujarat Veterinarians' Social Security Trust (AGVSST)	
	Gujarat Veterinary Association (GVA)	
	The Gujarat Association of Agricultural Sciences (GAAS)	



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Name	Dr. Jatinkumar H. Patel		
Designation	Assistant Professor		
Qualification	Ph.D. (Veterinary Pharmacology)		
Contact No.	9428489543		
Email ID	jhpatel@kamdhenuuni.edu.in		
Joining date	20-07-2010		
Professional Experience	11 Years		
Job profile	Teaching, Research, Extension		
PG students guided	M.V.Sc.: 04	Ph.D.: 01	
Exams cleared	NET (ASRB, New Delhi)		
	CCC+ (SPIPA, Surat)		
Additional Duties Performed	<ul style="list-style-type: none"> • DDO of Veterinary College, Navsari • Member Secretary-Alumni association of Veterinary College, Navsari 		
Significant award	Hari Om Ashram Award by GAAS, Ahmadabad (2013)		
Publication	Teaching Manual: 12	Books/Booklets: 4	
	Chapters in Book: 9	Lead Papers: 7	
	Research Papers: 59	Vernacular Articles: 23	
	Abstracts: 40	Scientific Recommendations: 09	
Research Scheme	Evaluation and Validation of Antimicrobial and Anti-inflammatory Activity of Medicinal Plants Used by Vanbandhus of South Gujarat (Plan Scheme: Since 2012 till continue) CO-PI		
Departmental Research	AS PI-03; As Co-PI-09		
Competence building	Summer School/Winter School/CAFT/Orientation: 03		
	Seminar/Symposium/Conference: 30		
	Short courses/Training: 04		
Professional Membership	Alumni Association of Veterinary College Anand (AAVCA)		
	Vets Alumni Association Sardar Krushinagar		
	All Gujarat Veterinarians' Social Security Trust (AGVSST)		
	Indian Society of Veterinary Pharmacology & Toxicology (ISVPT)		
	Indian Association of Veterinary Pathology (IAMP)		
	Gujarat Veterinary Association (GVA)		
	The Gujarat Association of Agricultural Sciences (GAAS)		





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Name	Dr. Falguni D. Modi		
Designation	Assistant Professor		
Qualification	Ph.D. (Veterinary Pharmacology)		
Contact No.	7600049181		
Email ID	fdmodi@kamdhenuuni.edu.in		
Joining date as VO	26-06-2009 (SDAU, Dantiwada)		
Date of Promotion as AP	25-05-2018 (NAU, Navsari)		
Professional Experience	12 Years		
Job profile	Teaching, Research, Extension		
Exams cleared	CCC+ (Technical examination Board, Govt. Of Gujarat)		
	Hindi Language Exam		
	Departmental Exam		
Publication	Teaching Manual: 08	Books/Booklets: 03	
	Chapters in Book: 01	Lead Papers: 04	
	Research Papers: 22	Vernacular Articles: 24	
	Abstracts: 30	Scientific Recommendations: 09	
Research Scheme	Evaluation and Validation of Antimicrobial and Anti-inflammatory Activity of Medicinal Plants Used by Vanbandhus of South Gujarat (Plan Scheme: Since 2012 till continue) CO-PI		
Departmental Research	AS PI-02; As Co-PI-10		
Competence building	Summer School/Winter School/CAFT/Orientation: 02		
	Seminar/Symposium/Conference: 28		
	Short courses/Training: 07 days training (01)		
Professional Membership	Vets Alumni Association Sardar Krushinagar (VAAS)		
	All Gujarat Veterinarians' Social Security Trust (AGVSST)		
	Indian Society of Veterinary Pharmacology & Toxicology (ISVPT)		
	Gujarat Veterinary Council (GVC)		

NON TEACHING STAFF::

Name	Ms. Sejal Patel	
Designation	Laboratory Technician	
Qualification	B.Sc., CMLT	
Contact No.	9979680656	
Email ID	seju_1013@yahoo.com	
Joining date at NAU	22-04-2010	
Professional Experience	12 Years	
Job profile	Laboratory work	
Exams cleared	CCC, Departmental Exam	
Additional Duties Performed	Office work in SRC	

Name	Ms. Lipsa Desai	
Designation	Laboratory Technician	
Qualification	B.Sc., M.Sc.	
Contact No.	9427007247	
Email ID	desailipi@gmail.com	
Joining date at NAU	22-04-2010	
Professional Experience	12 Years	
Job profile	Laboratory work	
Exams cleared	CCC, Departmental Exam	
Additional Duties Performed	-	

:: CONTACT US ::

i/c Assistant Professor & Head

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