

**:: ACTIVITIES ::****A) TEACHING:***Under graduate*

Sr. No.	Course code	Course Name	Course Credit	Year
1	VPT	Veterinary Pharmacology & Toxicology	4+1	Third

*Post graduate*

Sr. No.	Course code	Course Name	Course Credit
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-692	Master's research	20
15	VPT-701	Advances in neuropharmacology	2+0
16	VPT-702	Autacoid pharmacology	1+0
17	VPT-703	Pharmacology of herbal drugs	2+1
18	VPT-704	Drug metabolism	2+0
19	VPT-705	Molecular pharmacology	2+0
20	VPT-706	Pharmacokinetics	2+1
21	VPT-707	Pharmacogenomics	2+0

22	VPT-708	Immunopharmacology	1+0
23	VPT-709	Molecular toxicology	2+0
24	VPT-710	Clinical pharmacology	1+1
25	VPT-711	Clinical toxicology	2+1
26	VPT-712	Ecotoxicology	2+0
27	VPT-713	Regulatory toxicology	2+1
28	VPT-790	Special problem	0+2
29	VPT-791	Doctoral seminar-I	1+0
30	VPT-792	Doctoral seminar-II	1+0
31	VPT-799	Doctoral research	45

***Polytechnic in Animal Husbandry***

Sr. No.	Course code	Course Name	Course Credit	Semester
1	VP-221	Introductory Pharmacology	3+2	Fourth

***Intake capacity PG: 2 (M.V.Sc.)***

Recognised Guide (M.V.Sc.): Dr. J. H. Patel

***PG & Ph.D. students completed study:***

M.V.Sc. – 07

Ph.D. – 03

**B) RESEARCH:**

- **GOG Plan Scheme (Running):** Evaluation and Validation of Antimicrobial and Anti-inflammatory Activity of Medicinal Plants Used by Vanbandhus of South Gujarat (147.7 Lakhs)
- **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.

**Department: Veterinary Pharmacology & Toxicology, Veterinary College, NAU, Navsari**

3. Studies on Pharmacokinetics and Pharmacodynamic relationship of Cefprome in Cow Calves.
4. Studies on Pharmacokinetics and Pharmacodynamic relationship of Cefprome 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.

***State of art instruments:***

1. Semi preparative cum analytical HPLC
2. Deep freezer - 45°C
3. Refrigerated Centrifuge
4. Milli-Q Integral water purification system
5. Laminar Air flow cum Biosafety cabinet
6. Respiratory pump /Anesthesia system for laboratory animal
7. Freeze Dryer

**C) EXTENSION:**

- Guidance to animal owners during Pashupalan shibir regarding use of medicinal plants and toxicity of poisonous plants

**D) OTHER ACTIVITIES:**

1. Zero hour teaching or coaching for weak and needy students
2. Dr. R. D. Varia as Member Secretary and Dr. Falguni Modi as Veterinarian to the Institutional Animal Ethics Committee (IAEC) of the college.
3. Dr. R. D. Varia is working as the Convener of Examination cell/Press committee of college.
4. Dr. R. D. Varia is also working as Assistant DDO of Veterinary College, NAU, Navsari.
5. Dr. J. H. Patel is working as treasurer of Alumni Association of Veterinary College, Navsari.
6. Dr. J. H. Patel is working as Drawing and Disbursing Officer (DDO) of Veterinary College, NAU, Navsari
7. Dr. Falguni Modi is working as college level gender committee.
8. Department is maintaining Laboratory animal house of the college.

**Department: Veterinary Pharmacology & Toxicology, Veterinary College, NAU, Navsari**

## :: 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 <0.4µg/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 µg/ml), *Proteus mirabilis* (0.08 µg/ml), *Staphylococcus aureus* (0.16 µg/ml), *Pseudomonas aeruginosa* (2.56 µg/ml) and *Streptococcus pyogenes* (5.12 µg/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 µg/ml), *Bacillus subtilis* (0.64 µg/ml), *Proteus mirabilis* (0.64 µg/ml), *Streptococcus pyogenes* (2.56 µg/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 150 mg/kg body weight in carrageenan induced rat paw edema model.

#### **LABORATORY MANUAL PREPARED:**

<b>Course code</b>	<b>Course Name</b>
1. VPT-311	General & Systemic Veterinary Pharmacology
2. VPT-321	Veterinary Neuropharmacology
3. VLD-421	Veterinary Laboratory Diagnosis (Toxicology part)
4. VP-221	Introductory Pharmacology (Polytechnic)
5.	Veterinary Pharmacology & Toxicology (Unit: 1) (VCI regulation – 2016)
6.	Veterinary Pharmacology & Toxicology (Unit: 2 & 3) (VCI regulation – 2016)
7.	Veterinary Pharmacology & Toxicology (Unit: 4 & 5) (VCI regulation – 2016)

#### **SEMINAR / WORKSHOP / CONFERENCE ORGANIZED:**

1. One day seminar on “Role of Veterinarian in containment of Antimicrobial Resistance” on 28<sup>th</sup> April, 2012.
2. XVI Annual conference of Indian Society of Veterinary Pharmacology and Toxicology and National symposium on “Animal Health and Production: Challenges & Opportunities in Veterinary Pharmacology & Toxicology” during 23-25 November, 2016.



3. National Pre-conference Workshop on “Animal Welfare and Alternatives to Animals in Education and Research” on 22<sup>nd</sup> November, 2016.
4. One day technical seminar on “Ethnopharmacology: A tool to curtail cost of animal therapy for sustainable dairy practices” for veterinarian on 7<sup>th</sup> December, 2019.

**(UPDATED on 1<sup>st</sup> December, 2020)**