Annexure XII

Department of Pharmacology, NARIP, Cheruthuruthy

Activities of About Department of Pharmacology since Inception

Medicinal Plants play an important role in Drug Development, as these are the source of majority of ingredients in Ayurvedic as well as Modern medicine. For successful and effective development of a drug, the basic requirement for the correct identification is the safety and biological activity. The core component of pharmacology research comprises of validation of the Ayurvedic formulations or medicinal plants by different biological screening methods and safety or toxicity studies, finding the effect dose range and dose dependent effect, generation of biological screening data for clinical implementation, contemporary scientific and pharmacological leads for important diseases of national importance based on strengths of Ayurveda and from the folklore claims.

The genesis of the department dates back to the month of August 1972, a year after the consecration of the institute. With an objective of carrying out Pharmacological and Toxicological investigations on Ayurvedic formulations, this department has seen a phenomenal metamorphosis over the years. Under the tutelage of Dr. Raja Ravi Varma, the then Senior Research Officer, the department has been quickly organized itself and started breeding experimental animals with in a span of six months. Early couples of years where mostly focused on understanding the antifungal properties of ayurvedic formulation such as *'Majishtadhi Yoga Churnam', 'Amruthothara Yogachurnam', 'Tagara'* and *'CABA-A'*. However, with procurement of facilities for performing dose-response experiments between 1972-74, the departmental capability was flexed. This upgradation has unlocked a battery of dose-response experiments enabling us to understand the tissue specific effect of Ayurvedic formulations.

Extensive studies on *'AYUSH-49'* carried out between 1975-77 provided a lucid insight into its anti-histaminergic potential, evident from the rabbit's Ileum based experiments. Additionally, the department had also explored the negative iono and chronotrophic effects of *AYUSH-49* which would endorse its candidature as a hypotensive agent. Contemporarily, *'Gandhamarjara Veerya'* project was a unique yet challenging task handled by the department. Our studies have shown that *'Gandhamarjara Veerya'* could reverse histamine induced iliac spasm. Perpetually, our department continued to explore the pharmacological activities of *'Dhanwantara Gutika'*, *'Kandi Venna'* and a coded drug *SVE* in collaboration with Captain Srinivasamurthy Research Institute, Madras. As the department thrived through the years, a special attention was paid on expanding the livestock of the animal house. During 1980-82animal house witnessed an exponential growth of livestock from 60 to 527 in order to parallel with the increasing experimental work load and research needs.

Measures were taken since then in order to maintain a quantum of life stock which could facilitate a smooth research activity in the department. In addition to the rodents and lagomorphs, animal house had also housed frogs, leeches, dogs and cats in order to explore the cardiovascular and neuromuscular effects of Ayurvedic preparation.

Besides performing isolated frog heart and rabbit atrial experiments, heart rate and electrocardiographic analysis of cardiotonic drugs had started since 1981 accentuating the scope of research. The department continued to study more drugs such as *'Vilwadi gutika','Sahachara', 'Lodhrasava', 'Balarishtam','Vettumaran gutika', 'Mandooravataka'* and established their CNS and anti-inflammatory activites. With a soaring research activity and a greater shift towards neuromuscular profiling of ayurvedic drugs, experimental models for evaluating anti-depressant, anti-parkinsonian, anti-psychotic, analgesic, anti-inflammatory and anti-convulsant activities were standardized. In accordance, department was fortified with facilities for neurological evaluation such as mazes, rotarod, pole climbing apparatus and electro-convuslometer. In recent years the research focus is diversified with a special emphasis on Metabolic, osteoarthritic, neuro-behavioral and cardiovascular screening of Ayurvedic preparations. In accordance to this, several projects were completed related to anti-diabetic studies on *Vasanta Kusumakar Ras, Nisha Triphala Yoga,* Anti-arthritic study of *Vatari Guggulu & AYUSH SG-5* and safety evaluations of *AYUSH 64, AYUSH SG-5 & AYUSH SC-3*, safety study of *AYUSH GMH* , Comparative evaluation of Ayurvedic source plants for analgesic and anti-inflammatory activity and *Brahmi Drakshyadi Kashayam* for neurobehavioral alterations. At present department is engaged with and 02 IMR collaborative project with IITR & JSSCP for the years 2024-26.

It gives an immense sense of satisfaction to announce that the department has generated scientific evidence on efficacy of 60 and safety studies of 59 Ayurvedic formulations. Additionally, the department has generated scientific evidence on safety/ toxicity evaluation of 29 single, 20 compound and 9 coded drugs. Apart from the research activities, the research staff had rendered their literally contribution to book chapters in *'Database on Medicinal plants used in Ayurveda Vol.10', 'Report of Pharmacological profile and safety/toxicity of Yograj guggulu and Mahanarayana Taila (classical formulation)'* and *'Exploration of Veterinary practices in Ayurveda'*. The department have also contributed to the preparation of monographs of various herbs such as *Commiphora wightii*, *Curcuma longa, Emblica officinalis, Piper longum, Rauwolfia serpentina, Cassia angustifolia*and *Gloriosa superba*.

The department of Pharmacology is having approved Animal House facility. It has been registered under CCSEA bearing registration number 612/CPCSEA/GO/R/S/02.The registration is being renewed periodically along with reconstitution of the IAEC meetings and animal house inspections are held periodically. At present rats and mice have been procured from the registered supplier to carry out safety and efficacy studies pertaining to single/compound Ayurvedic formulations/coded drug. The laboratory is well equipped with advanced analytical instruments viz: *Fully Automated Biochemistry analyzer Em Destiny 180, Semi Automated Bio Chemistry Analzyer*

(Robonik), Electrolyte Analyzer Krishlyte, 4 Part Hematology Analyzer Exigo H400, Elisa reader and washer- Micro Lab, Coagulation Analyzer (Sysmex CA-50), Nitrogen Evaporator, Ice Flaking Machine, EPM, FST with Any Maze video tracking camera & application (Rolex Scientific), Paw Pressure Analgesiometer (orchid scientific), Tail Flick Analgesiometer (orchid scientific), Digital Plethysmometer (orchid scientific), Digital Actophoto meter (orchid scientific), Rota rod (orchid scientific), Hot Plate Analgesiometer (Indosati), Vet. Isoflurane Anesthesia set (new gen medical systems), CO_2 Euthanasia set.

The department had conducted one day seminar on 'Standardization and Preclinical Studies of Ayurvedic Formulations' on 6th March 2023. So far the department has published more than 50 research publications in last fifteen years and attended various conferences/workshop/scientific meetings at National and International level.

List of Research Projects Ongoing/Completed by Department of Pharmacology

Sr. No.	Title of the project	Year of completion
1)	CNS studies, & exploratory behaviour of *Adiantum lanulatum* (stem bark)	2004
2)	CNS studies, exploratory behaviour& anti depressant activity of *Abies webbiana* (Leaves)	2004
3)	CNS studies, exploratory behaviour& anti depressant activity of *Ailanthus excelsa* (stem bark)	2004
4)	CNS studies, exploratory behaviour& anti depressant activity of *Adiantum capilus veneris* (Whole plant)	2004
5)	Pharmacological evaluation of Ayurvedic preparation Amrthottaram Kwatha (CNS studies, & exploratory behaviour)	2004
6)	CNS studies, exploratory behaviour, anti depressant activity,Analgesic, anti inflammatory & anti pyretic study of *Sisymbrium irio* Linn. (Seeds) Decoction & Aqueous extracts	2005
7)	CNS studies, anti depressant activity, Anti psychotic, Acute toxicity, Analgesic, anti inflammatory of Nayopayam Kwatha	2005
8)	Acute toxicity studies, 28 days repeated dose oral toxicity, 91 days repeated dose oral toxicity studies of Ayush M, Ayush SL, Ayush Manas, Ayush QOL2.	2006
9)	CNS studies, exploratory behaviour, anti depressant activity, Acute toxicity, Hypnotic potentiating effect, Analgesic, anti inflammatory & anti pyretic studies of *Anethum sowa* Roxb.	2006
10)	Acute toxicity studies, sub acute toxicity study of Manasamitra Vataka	2007

11)	Acute and chronic toxicity studies of Yogaraja Guggulu	2008
12)	Acute & chronic dermal toxicity studies of Mahanarayana Taila	2008
13)	Intellect promoting activity of Manasamitra Vataka	2008
14)	Acute toxicity, sub acute toxicity study of Ayurvedic Bhasma/ Rasakalpa- coded drug –Wj	2009
15)	Sub acute and chronic toxicity studies of Ayurvedic Bhasma / Rasakalpa- Coded drug **Yn** in both Wistar albino Rats and Swiss albino Mice.	2009
16)	Sub acute (28 days) and Chronic toxicity 90 Days) studies of Zj in bothn wistar rats and Swiss mice.	2010
17)	CTD Monograph of *Commiphora wightti* (Arn.) Bhandari, *Curcuma longa.* L, *Emblica officinalis.* Gaertn.,*Piper longum* L*., Rauwolfia sepentina (*L). Benth	2011
18)	CTD Monograph of *Cassia angustifolia* Vahl., *Gloriosa Superba* L.	2012
19)	Evaluation of Analgesic, anti-inflammatory and anti arthritic activity of Sunthi guggulu (Triphala shodhita) and gomutra shodhita) in experimental animals	2016
20)	Evaluation of Analgesic activity of coded drugs AYUSH SG1 and AYUSH SG2.	2017
21)	Evaluation of analgesic, anti-inflammatory Analgesic and antiarthritic activity of Sunthi guggulu (Triphala shodhita (TS) and gomutra Shodhita (GS)	2018
22)	Evaluation of coded drug AYUSH SG 3 for analgesic and anti-inflammatory activities in experimental animals.	2019
23)	Evaluation of coded drugs AYUSH SG 4 and AYUSH SG 5 for analgesic and anti-inflammatory activities in experimental animals.	2020
24)	Evaluation of antidiabetic activity of Ficus Glibbosa Blume (Leaves & Stem bark) extracts in streptozotocin-nicotinamide induced diabetes in experimental animals.	2020
25)	Evaluation of Vatariguggulu for anti-arthritic activity through different arthritis models in experimental animals.	2021
26)	Evaluation of antidiabetic activity of Vasant kusumakar ras in streptozotocin and high fat diet induced diabetes in Sprague Dawley rats.	2022
27)	Evaluation of Anti-Diabetic activity of Nisha Triphala Yoga in Streptozotocin and High fat diet induced Diabetes in Sprague Dawley Rats.	2022

28)	Acute and 90 days repeated dose oral toxicity study of AYUSH-SC 3 in experimental animals.	2022
29)	Acute and 90 days repeated dose oral toxicity study of AYUSH-64 in experimental animals.	2022
30)	Anti-arthritic activity of AYUSH SG5 in experimental animals.	2023
31)	Effect of Brahmidrakshyadikashayaon chronic restraint stress (CRS) induced neurobehavioral alterations in experimental Rats.	2024
32)	Comparative evaluation of selected Ayurvedic Pharmacopoeial source plants and their substitutes through Experimental Pharmacology.	2024
33)	Acute and Sub Chronic (90 days) repeated dose oral toxicity study of AYUSH GMH in experimental animals.	2025
34)	Toxicity Profile of Shwasakuthar Rasa In Experimental Animals	2026
35)	Evaluation of Brahmi Ghrita in in-vitro and in-vivo models of Alzheimer's disease.	2026

Salient Achievements of the Department

- The department of Pharmacology is well recognized for its scientific contribution towards bio-prospecting of indigenous medicine. Extensive studies on *'AYUSH-49'* were carried out between 1975-77 provided a lucid insight into its anti-histaminergic potential, evident from the rabbit's Ileum based experiments.
- During 1980-82 animal house witnessed an exponential growth of livestock from 60 to 527.In addition to the rodents and lagomorphs, animal house had also housed frogs, leeches, dogs and cats in order to explore the cardiovascular and neuromuscular effects of Ayurvedic preparation.
- Besides performing isolated frog heart and rabbit atrial experiments, heart rate and electrocardiographic analysis of cardiotonic drugs had started since 1981 accentuating the scope of research.
- The department has generated scientific evidence on efficacy of 36 Single, 16 compound and 8 coded ayurvedic formulations. Additionally, the department has generated scientific evidence on safety/ toxicity evaluation of 29 single, 21 compound and 9 coded drugs and developed the state of art equipment facilities.

- Apart from the research activities, the research staff had rendered their literally contribution to book chapters in *'Database on Medicinal plants used in Ayurveda Vol.10', 'Report of Pharmacological profile and safety/toxicity of Yograj guggulu and Mahanarayana Taila (classical formulation)'* and *'Exploration of Veterinary practices in Ayurveda'*.
- The department have also contributed to the preparation of monographs of various herbs such as *Commiphora wightii*, *Curcuma longa, Emblica officinalis, Piper longum, Rauwolfia serpentina, Cassia angustifolia* and *Gloriosa superba*.
- The department had conducted one day seminar on 'Standardization and Preclinical Studies of Ayurvedic Formulations' on 6th March 2023.So far the research staff of this department has published more than 50 research publications in last fifteen years and attended various conferences/workshop/scientific meetings at National and international level.

Articles published from February 2026 to February 2026

S. No.	Name of the Corresponding author	Type of Research Publication	Citation of the Research Publication (Research Article) [Vancouver style]	Discipline	Date of publication (Month & Year)	Indexing agency i.e.	DOI, ISSN
1.	Dr. Sudesh N. Gaidhani	Research article	Gaidhani, Sudesh, Reddy, S, Ala Srikanth Effect of Vasant Kusumakar Ras on blood glucose levels of fasted normoglycemic and oral glucose induced hyperglycemic SD Rats. International journal of scientific research, Volume-12, Issue-06, p1-3	Pharmacology & Safety studies	June, 2023	Pubmed	DOI:10.36106 /ijsr/1621367, ISSN No. 2277 - 8179
2.	Dr. Sudesh N. Gaidhani	Research article	Gaidhani, S. N., Reddy, S. V., Ala, S., Kumar, S., Jamadagni, S., Deshmukh, P. J., Subrahmanyam, K., & Avinash, G. Safety Assessment of AYUSH SC-3 through Acute and 90 Days Repeated Dose Oral Toxicity Study. Toxicology International, 30(4), 559–572.	Pharmacology & Safety studies	December, 2023	Scopus, Embase	DOI: 10.18311/ti/20 23/v30i4/3420 7, ISSN:0971-6580
3.	Dr. Srikanth Ala	Research article	Ala, Srikanth; Gaidhani, Sudesh N.; Reddy, S. Viswanth; Kumar, YR Sanjaya1; Jamadagni, Shrirang B.2. Safety assessment of AYUSH-64 through acute and 90-days repeated dose oral toxicity. International Journal of Ayurveda Research 4(4):p 231-241.	Pharmacology & Safety studies	December, 2023	UGC Care	DOI: 10.4103/ijar.ij ar_90_23, ISSN: 0974-7788

4.	Dr. Srikanth Ala	Research article	Ala, Srikanth; Sanjaya Kumar, YR; Gaidhani, Sudesh N.; Suneel, Singh Vandhana; Reddy, Viswanth; Jamdagni, Shrirang B.; Selvam, N Thamizh. Safety Evaluation of Vatari Guggulu through Acute and 90-day Repeated Dose Toxicity Study in Experimental Animals. Ancient Science of Life 38(3&4):p 122-134.	Pharmacology & Safety studies	January, 2024	Web of Science	DOI: 10.4103/asl.asl_131_22, ISSN: 0257-7941
5.	Dr. Sudesh N. Gaidhani	Research article	Gaidhani SN, Padhi MM, Singh A, Reddy V, Ala S. Safety of AYUSH OSTO in Experimental Animals. Int J Ayurveda Res. 2024; 5(2):P 108-114	Pharmacology & Safety studies	July 2024	UGC Care	DOI:10.4103/ijar.ijar_27_24, ISSN: 0974-7788
6.	Dr. Sudesh N. Gaidhani	Research article	Sudesh SN, Dayanand Reddy.G, Ganesan.R, Pawan Tiwari, Srikanth.N, Padhi.M. M, Viswanth Reddy, Srikanth A. Pre Clinical Safety Assessment of AYUSH Carctol S through Acute and Sub Chronic Oral Toxicity Study: Safety Assessment of AYUSH Carctol S.Toxicology International. 2024;31(4) : P 539-549.	Pharmacology & Safety studies	October, 2024	Scopus, UGC Care	DOI: 10.18311/ti/2024/v31i4/36421, ISSN : 0971-6580
7.	Dr. Sudesh N. Gaidhani	Research article	Sudesh SN, Thirupathiah B, Thulasi R, Parvathy G. N, Lakshminarayana M, Viswanth S, Sanjay Kumar YR and Srikanth Ala. Quality control analysis, phytochemistry, and pharmacognosy of botanical source plants for Murva [*Chonemorpha fragrans* (Moon) Alston and *Marsdenia tenicissima (Roxb.)*Moon]: A comparative assessment. IJNPR.2025;16(1):P 135-159.	Quality Control, Pharmacognosy, & Pharmacology & Safety studies	March, 2025	Scopus	DOI: 10.56042/ijnpr.v16i1.14257, ISSN: 0976-0504
8.	Dr. Sudesh N. Gaidhani	Research article	Gaidhani, Sudesh N.; Reddy, S. Viswanth; Ala, Srikanth; Sanjaya Kumar, Y. R.1; Jamdagni, Shrirang B2; Dhiman, Kartar Singh1; Sharma, Bhagwan Sahay1. Acute and repeated dose oral toxicity study of AYUSH SG-5 in Sprague Dawley rats. International Journal of Ayurveda Research 6(1):p 25-31,	Pharmacology & Safety studies	April, 2025	UGC Care	DOI: 10.4103/ijar.ijar_97_24., ISSN: 0974-7788
9.	Dr. Sudesh N. Gaidhani	Research article	Gaidhani, Sudesh N.1; Srikanth, N.2; Singh, Arjun2; Deshmukh, P. V.3; Reddy, Viswanth1; Lavekar, Gandhidas S.2; Ala, Srikanth1. Safety Assessment of Ayurvedic Formulation “Annabedi chendooram” in Experimental Animals. Ancient Science of Life 39(1):p 50-55.	Pharmacology & Safety studies	September, 2025	Web of Science	DOI: 10.4103/asl.asl_5_24, ISSN: 0257-7941

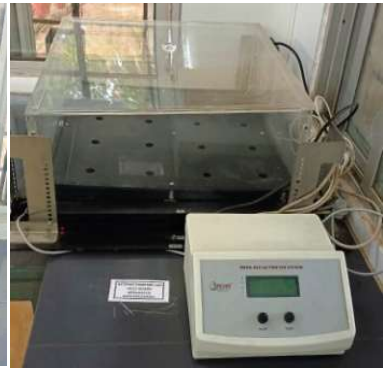
10.	Dr. Sudesh N. Gaidhani	Research article	Gaidhani, Sudesh N.; Reddy, S Viswanth; Ala, Srikanth; Sanjaya Kumar, Y R1; Jamadagni, Shrirang2; Dhiman, K. S.1; Khanduri, Shruthi1. Evaluation of Anti-arthritic Activity of AYUSH SG-5 in Complete Freund's Adjuvant-induced Arthritis. Journal of Ayurveda 19(3):p 228-235.	Pharmacology & Safety studies	September, 2025	UGC Care	DOI: 10.4103/joa.joa_290_23, ISSN: 2321-0435

Photos of Various Committee Meetings/Visit of College Students /Instruments/Research Facilities


EXPERIMENTAL ANIMAL HOUSE FACILITY





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Lenovo


ICE FLAKER


OPPO Reno8 T 5G


EXPERIMENTAL ANIMAL HOUSE FACILITY