

INSECT REPRODUCTION LABORATORY

Principal Investigator: Dr. Kamal Kumar Gupta

Associate Professor

Department of Zoology

kgupta@db.du.ac.in

kamal_suyash@yahoo.com

Research Areas: Molecular taxonomy and phylogeny of Insects, Insect Plant Interaction, Insect Reproductive Behavior and Physiology, Vector Biology and Management

Supervision of Doctoral Thesis, under Progress

1. Mr. Shailendra Kumar
2. Mr. Vijay Kumar Shah
3. Ms. Chandni Sharma

Supervision of Awarded Doctoral Thesis: 2

1. **Sunil Kayesth:** Influence of Plant Extracts on Survival, Longevity, Growth, Development and Reproductive Bioactivities of *Dysdercus koenigii*. Ph. D., awarded on March 9, 2016
2. **Monika Mishra:** Evaluation of the Bio-efficacy of *Thevetia neriifolia* Extracts on the Growth and Development of *Helicoverpa armigera* (Lepidoptera: Noctuidae). Ph. D. awarded on March 4, 2016

Supervision of M.Sc. Dissertation:

1. Payal Gupta 2017. In Silico Determination of Mechanism of Farnesol in *Dysdercus koenigii*. Dissertation submitted to Jamia Milia Islamia. New Delhi

Research Papers Published in Refereed/Peer Reviewed Journals (Last five years): 11

1. Mishra M., **Gupta K.K.**, and Kumar S. 2019. Diminished activity of midgut enzymes in *Helicoverpa armigera* Hübner (Lepidoptera; Noctuidae) larvae induced by dietary stem extracts of *Thevetia neriifolia*. Journal of Lepidopterist's Society. In Press
2. **Gupta K. K.**, Mohd Shazad and Shailendra Kumar. 2019. Relevance of the Prolonged First Mating in Reproductive Bioactivities of *Dysdercus koenigii* Fabricius (Heteroptera: Pyrrhocoridae). Polish Journal of Entomology 88(1): 63-77. DOI: 10.2478/pjen-2019-0005
3. Kayesth S., Shailendra Kumar, Mohd Shazad and **Gupta K. K.** 2019. Effects of *Ocimum sanctum* hexane extract on survival and development of *Dysdercus koenigii* Fabricius

(Heteroptera: Pyrrhocoridae) Archives of Phytopathology and Plant Protection. DOI: 10.1080/03235408.2018.1541148

4. Mohd Shazad, **Gupta K. K.**, Kayesth S. and Shailendra Kumar 2018. Sublethal Effects of Ethanol Extract of *Ocimum Sanctum* on Laboratory Bred Population of Dengue Mosquito *Aedes Aegypti* L. (Diptera: Culicidae). Vector Biology Journal. 3(1) [10.4172/2473-4810.1000128](https://doi.org/10.4172/2473-4810.1000128)
5. Mishra M., **Gupta K. K.** and Kumar S. 2018. Growth regulatory and growth inhibitory effects of *Thevetia neriifolia* stem extracts on *Helicoverpa armigera* (Lepidoptera: Noctuidae). Archives of Phytopathology and Plant Protection. <https://doi.org/10.1080/03235408.2018.1521324>
6. Kayesth S., and **Gupta K. K.** 2018. Impact of *Lantana camara* hexane extract on survival, growth and development of *Dysdercus koenigii* Fabricius (Heteroptera: Pyrrhocoridae). Acta Ecologica Sinica. **38(3)**: 187-192 <https://doi.org/10.1016/j.chnaes.2017.12.002>
7. Kayesth, S., Shazad, M., Kumar, S., **Gupta, K. K.** 2017. Effect of ethanol extract of *Catharanthus roseus*, *Ocimum sanctum* and *Lantana camara* on fecundity and fertility of red cotton bug, *Dysdercus koenigii* Fabricius (heteroptera: pyrrhocoridae). Journal of Entomology and Zoology Studies. 5(4): 348-353
8. Kayesth Sunil and **Gupta K. K.**, 2016. An assessment of antifeedant potential and cidal activity of plant extracts on fifth instar nymphs of red cotton bug, *Dysdercus koenigii* Fabricius (Heteroptera: Pyrrhocoridae). Journal of Entomology and Zoology Studies. 4(4): 216-222
9. Monika Mishra, **K. K. Gupta** and Sarita Kumar. 2015. Impact of the stem extract of *Thevetia neriifolia* (Apocynaceae) on the feeding potential and histological architecture of the midgut epithelial tissue of early fourth instars of *Helicoverpa armigera* Hübner. International Journal of Insect Science, 2015:7 53–60 doi:10.4137/IJIS.S29127
10. Monika Mishra, **K. K. Gupta** and Sarita Kumar. 2015. Impact of stem extract of *Thevetia neriiflora* (Apocynaceae) on food consumption and growth of early fifth instars of *Helicoverpa armigera*. Malay Journal of Biosciences, 2(1): 26-35.
11. Monika Mishra, **K. K. Gupta** and Sarita Kumar. 2014. Impact of stem extracts of yellow oleander, *Thevetia neriifolia* (Apocynaceae) on the feeding potential of IV Instars of

gram pod borer, *Helicoverpa armigera* Hübner (Lepidoptera: Noctuidae). International Journal of Advanced Life Sciences 7(3): 408-416.

Research Publications (Abstracts) in International Conferences/Symposiums (Last five year): 19

1. **K. K. Gupta** and Sunil Kayesth, 2017. Bioefficacy of *Ocimum sanctum* on reproductive performance of red cotton bug, *Dysdercus koenigii* (Heteroptera: Pyrrhocoridae). 19th International Conference of Entomology, 2017, held at Paris, France, October19-20, 2017; awarded the best presentation award for the same.
2. Mohd Shazad and **K. K. Gupta**, 2017. An ecofriendly approach for the management of *Aedes aegypti* by *Ocimum sanctum*. 19th International Conference of Entomology, 2017, held at Paris, France, October19-20, 2017.
3. Shailendra Kumar and **K. K. Gupta**, 2017. Influence of farnesol on Growth and Development of *Dysdercus koenigii*. 19th International Conference of Entomology, 2017, held at Paris, France, October19-20, 2017.
4. Sunil Kayesth and **K. K. Gupta**, 2017. Bioefficacy of *Catharanthus roseus* on reproductive performance of red cotton bug, *Dysdercus koenigii* (Heteroptera: Pyrrhocoridae). 19th International Conference of Entomology, 2017, held at Paris, France, October19-20, 2017.
5. **K. K. Gupta** and Sunil Kayesth, 2017. Bioefficacy of hexane extract of *Ocimum sanctum* on survival, development and reproductive bioactivities of *Dysdercus koenigii* Fabricius (Heteroptera: Pyrrhocoridae). Hemipteran insect plant interaction HPIS 2017, held at Madrid, Spain, June 4-8, 2017. Page 196
6. Mohd Shazad, Shailendra Kumar, Kayesth S., **Gupta K. K.** 2017. An assessment of potentials of *ocimum sanctum* in the management of *aedesaegypti* l. (diptera: culicidae). Indous Workshop & International Symposium on Biological Timing and Health Issues in the 21st Century, held at Department of Zoology, University of Delhi, Delhi (India) February 21-24, 2017.
7. Shailendra Kumar, Mohd Shazad, Kayesth S, **Gupta K. K.** 2017. Influence of *Catharanthus roseus* on Survival and Development of *Dysdercus koenigii*. Indous Workshop & International Symposium on Biological Timing and Health Issues in the 21st Century, held at Department of Zoology, University of Delhi, Delhi, India. February 21-24, 2017.

8. **K. K. Gupta** and Sunil Kayesth, 2016. Influence of plant volatiles on mating behaviour and reproductive fitness of *Dysdercus koenigii*. XXV International Conference of Entomology, held at Orlando, USA. September 25 -30, 2016.
9. Sunil Kayesth and **K. K. Gupta**, 2016. An assessment of juvenomimic activity of *Catharanthus roseus* on growth and development of *Dysdercus koenigii*. XXV International Conference of Entomology, held at Orlando, USA. September 25 -30, 2016.
10. Shailendra Kumar, Sunil Kayesth, Mohd Shazad and **K. K. Gupta**, 2016 Influence of *Catharanthus* on survival and development of *Dysdercus koenigii*. International Conference on Science: Emerging Scenario and Future Challenges, held at Dharamshala, India. 11-12 June, 2016.
11. **K. K. Gupta**, Mohd Shazad and Shailendra Kumar, 2016. Impact of *Ocimum sanctum* on the development and reproductive bioefficacy of dengue fever mosquito, *Aedes aegypti* L. (Diptera: Culicidae), in International Conference on Science: Emerging Scenario and Future Challenges, held at Dharamshala, India. 11-12 June, 2016.
12. Mohd Shazad and **K. K. Gupta**, 2015. Bioefficacy of *Ocimum sanctum* on survival, development and reproduction of dengue vector *Aedes aegypti* L. (Diptera: Culicidae). 18th International Conference of Entomology, Penang. Malaysia, December 3-4, 2015.
13. Sunil Kayesth and **K. K. Gupta**, 2015. Influence of *Catharanthus roseus*, *Ocimum sanctum* and *Lantana camara* extracts on survival and longevity of *Dysdercus koenigii*. World Academy of Science, Engineering and Technology. 18th International Conference of Entomology, Penang. Malaysia, December 3-4, 2015.
14. V. Baweja, **K. K. Gupta**, V. Dubey and C. Keshavam, 2014. Assessing antimicrobial activity of various plant extracts on midgut microflora of *Aedes aegypti*. World Academy of Science, Engineering and Technology, International Journal of Bioengineering and Life Sciences Vol:1, No:12, 2014. 18th International Conference of Entomology, Penang. Malaysia, December 4-5, 2014.
15. Sunil Kayesth and **K. K. Gupta**, 2014. Ecofriendly approach for the management of red cotton bug *Dysdercus koenigii* by botanicals. International Journal of Energy and Power Energy 1(10) 2014. 18th International Conference on Energy, Water and Environment Systems, Barcelona, Spain, October 27-28, 2014
16. **K. K. Gupta**, 2014. Mating Behaviour and its significance in reproductive performance of *Dysdercus koenigii*. World Academy of Science, Engineering and Technology,

International Journal of Bioengineering and Life Sciences Vol: 1, No:12, 2014. 18th
International Conference of Entomology, Penang, Malaysia, December 4-5, 2014.

17. **K. K. Gupta**, 2013. Effect of plant extracts on the midgut microbial flora of *Aedes aegypti*. Presented in XII International Conference on Vector and Vector borne diseases (ICOV), held at Udaipur, India. September 16- 18, 2013
18. Sunil Kayesth, **K. K. Gupta** and Rampal Rathore, 2013. Influence of hexane extract of *Ocimum sanctum* and *Catharanthus roseus* on longevity and reproduction of *Dysdercus koenigii* in ICER-2012, held at Kuala Terengganu, Malaysia. 22 -24 November, 2013.
19. **K. K. Gupta** and Sunil Kayesth, 2013. Influence of plant extracts on development and reproductive bioactivities of *Dysdercus koenigii*. Presented in International Chemical Ecology Conference (ICEC, 2013), held at Melbourne. August 19-23, 2013.

Research Project Completed

1. Impact of electromagnetic radiations on the behavioural response of dengue fever vector *Aedes aegypti*. Innovation research project DBC-201 funded by University of Delhi (2013-2014). **Principal Investigator.**
2. Effect of plant extracts on the midgut microbial flora of *Aedes aegypti*. Innovation research project DB-101 funded by University of Delhi (March 2012- July 2013). **Principal Investigator.**
3. Influence of certain plant extracts on reproductive behaviour and physiology of *Dysdercus koenigii* Research project funded by UGC under the scheme financial assistance for major research project (2009-2012).
4. Sperm behaviour and its implication on evolution of prolonged copulation in *Dysdercus koenigii*. (1.7.2003-30.6.2006). Research project funded by UGC under the scheme financial assistance for major research project. **Principal Investigator.** F. No. 3-137/2003.
5. Courtship behaviour and adaptive significance of prolonged mating in *Dysdercus koenigii*. (1999-2002). The research project was funded by UGC under the scheme financial assistance for major research project. **Principal Investigator.** F. 3-47/99 (SR-II)

Research Facilities and Infrastructure:

- UV spectrometer, Cary 60 UV-Vis, Agilent Technologies
- Refrigerated centrifuge, Sigma 3-18KS
- UV Transilluminator
- Orbital shaker
- Centrifuge, Eppendorf, Mini Spin
- Bright field Microscope, Nikon Eclipse E200LED ,
- Phase contrast Microscope, Motic B series, With Imaging functions
- Stereo Zoom Microscope, Nikon, C-LEDS with monitoring and recording functions
- Digital Balance, Sartorius
- Vacuum Rotary Evaporator (Buchi)
- Soxhlet Extraction Unit
- Basic paraphernalia to conduct Molecular Biology and Biochemical work
- Facilities for rearing and culture and behavioural studies of insects