Green Biotechnology

GROUP INTRODUCTION

Currently, research group is working on Nanobiotechnology, production of metallic nanoparticles by chemical and biological methods involving green chemistry approach. Research is also focused on production of transgenics of both medicinal and edible crops for enhancement of secondary metabolites, tolerance against biotic and abiotic stress along with their phytochemical analysis. It also involves establishing plant tissue culture, biological evaluation of synthetic and natural compounds along with cancer cell line studies.

GROUP HEAD

Dr. Erum Dilshad

PhD in Plant Biotechnology from the Department of Biochemistry, Quaid-i-Azam University Islamabad Pakistan and Department of Natural Products, Faculty of Pharmacy, University of Barcelona, Spain, with main focus on enhancement of antimalarial compound by genetic transformation of Artemisia species along with its phytochemical analysis including cancer cell line studies and pharmacological investigations.

Awards and Distinctions of Head:

1. HEC approved Supervisor
2. Productive Scientist of Pakistan by PCST (2016-2017)

RESEARCH AREAS

- Nanobiotechnology
- Phytochemistry
- Bioassays
- Cancer cell line studies
- DNA Barcoding
- Plant Cell and Tissue Culture
- Plant and Bacterial Genetic Transformation

GROUP MEMBERS

- Mehmoona Bibi
- Kamran javed
- Iqra Bashir
- Farhan Kamal Bakhtiar
- Nabgha Nosheen
- Huma Noor
- Umar Ali
- Syeda Sojla
- Zainab Bashir
- Ammar Hamza
- Adeel Siddique

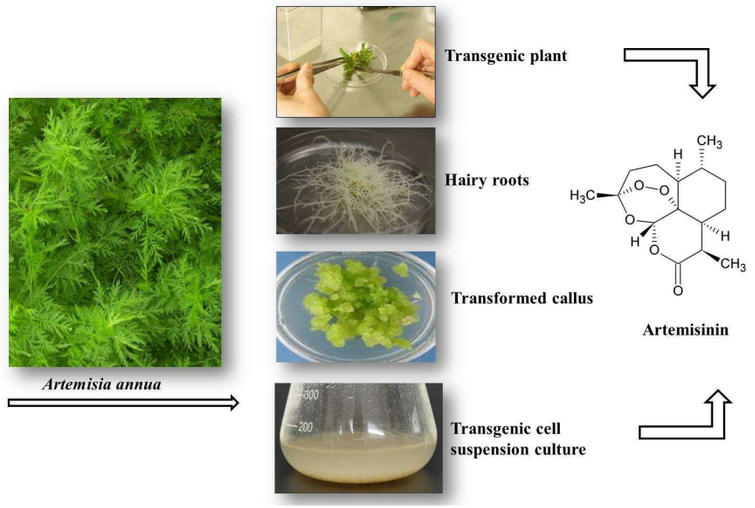
MS ALUMNI

Miss Naqoosh Zahra

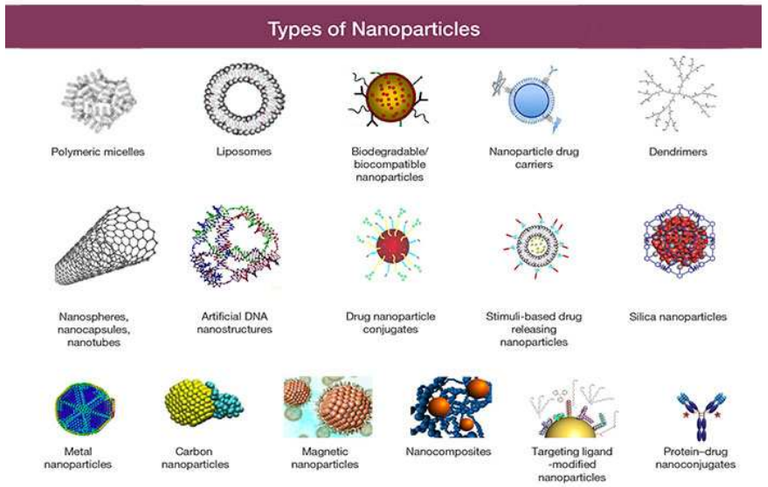
Thesis Title: Green Synthesis and Characterization of Silver Nanoparticles Using Leaf Extract of Artemisia Carvifolia and their Anti-Bacterial, Anti-Fungal, Anti-Oxidant, Cytotoxic Activities.
Year: 2018

Miss Fatimah tu Zahra:

Thesis Title: Optimization of Conditions for Micropropogation of Spinach (Spinacia oleracea).
Year: 2018



Biotechnological production of artemisinin



Selected Publications

Journal Publications

- L. F. Ali, A. Saeed, M. Faisal, P. A. Channar, S. S. Azam, H. Ismail, E. Dilshad, and B. Mirza, "Synthesis, molecular docking and comparative efficacy of various alkyl/aryl thioureas as antibacterial, antifungal and α-amylase inhibitors". **Computational biology and chemistry**, vol. 77, pp.193–198, 2018.
- W. K. Kayani, B. H. Kiani, E. Dilshad, and B. Mirza, "Biotechnological approaches for artemisinin production in artemisia", **World Journal of Microbiology and Biotechnology**, vol. 34, no. 4, pp. 54, 2018.
- A. Munir, S. Hussain, and E. Dilshad, "Silver nanoparticles conjugated with neurotrophin 3 upregulate myelin gene transcription pathway", **Journal of theoretical biology**, vol. 459, pp. 111–118, 2018.
- S. Rehman, Ring, K. K., Haq. I. U. , E. Dilshad, M. I. Khan, N. Akhtar, and B. Mirza, "Drier Climatic Conditions Increase Withanolide Content of Withania coagulans Enhancing Its Inhibitory Potential Against Human Prostate Cancer Cells", **Applied biochemistry and biotechnology**, 2018.
- A. Saeed, P. A. Channar, F. A. Larik, F. Jabeen, U. Muqadar, S. Saeed, U. Fl¨orke, H. Ismail, E. Dilshad, and B. Mirza, "Design, synthesis, molecular docking studies of organotin-drug derivatives as multi-target agents against antibacterial, antifungal, α-amylase, α-glucosidase and butyrylcholinesterase", **Inorganica Chimica Acta**, vol. 464, pp. 204–213, 2017.
- H. Ismail, E. Dilshad, M. T. Waheed, and B. Mirza, "Transformation of Lettuce with rol ABC Genes: Extracts show enhanced antioxidant, analgesic, anti-Inflammatory, antidepressant, and anticoagulant activities in aats", **Applied Biochemistry and Biotechnology**, vol. 181, no. 3, pp. 1179–1198, 2017.
- H. Ismail, E. Dilshad, M. T. Waheed, M. Sajid, W. K. Kayani, and B. Mirza, "Transformation of Lactuca sativa L. with rol C gene results in increased antioxidant potential and enhanced analgesic, anti-inflammatory and antidepressant activities in vivo", **3 Biotech**, vol. 6, no. 2, p. 215, 2016.
- W. K. Kayani, E. Dilshad, T. Ahmed, H. Ismail, and B. Mirza, "Evaluation of Ajuga bracteosa for antioxidant, anti-inflammatory, analgesic, antidepressant and anticoagulant activities", **BMC Complementary and Alternative Medicine**, vol. 16, no. 1, pp. 375, 2016.
- E. Dilshad, R. M. Cusido, J. Palazon, K. R. Estrada, M. Bonfill, and B. Mirza. "Enhanced artemisinin yield by expression of rol genes in Artemisia annua", **Malaria journal**, vol. 14, no. 1, pp. 424, 2015.
- E. Dilshad, R. M. Cusido, K. R. Estrada, M. Bonfill, and B. Mirza. "Genetic transformation of Artemisia carvifolia Buch with rol genes enhances artemisinin accumulation". **PLoS One**, vol. 10, no. 10, pp. e0140266, 2015.

Conference Proceedings

- S. Sojla, Z. Bashir and E. Dilshad, "Green Synthesis and Characterization of Silver Nanoparticles Using Alo vera Plant Gel and Their Biological Evaluation?, **1st National Conference on Medicinal Plant Research**, 2018.
- N. Ashraf, E. Dilshad and B. Mirza, "Genetic transformation of Lycopersicon esculentum Mill. using an abiotic stress tolerance gene", **4th International Conference on Biological and Computer Science**, 2016.
- E. Dilshad and B. Mirza, "Genetic transformation of Artemisia carvifolia Buch with rol genes for enhancement of secondary metabolites", **ISESCO WINS 2016 conference Quaid-i-Azam University Islamabad**, 2016