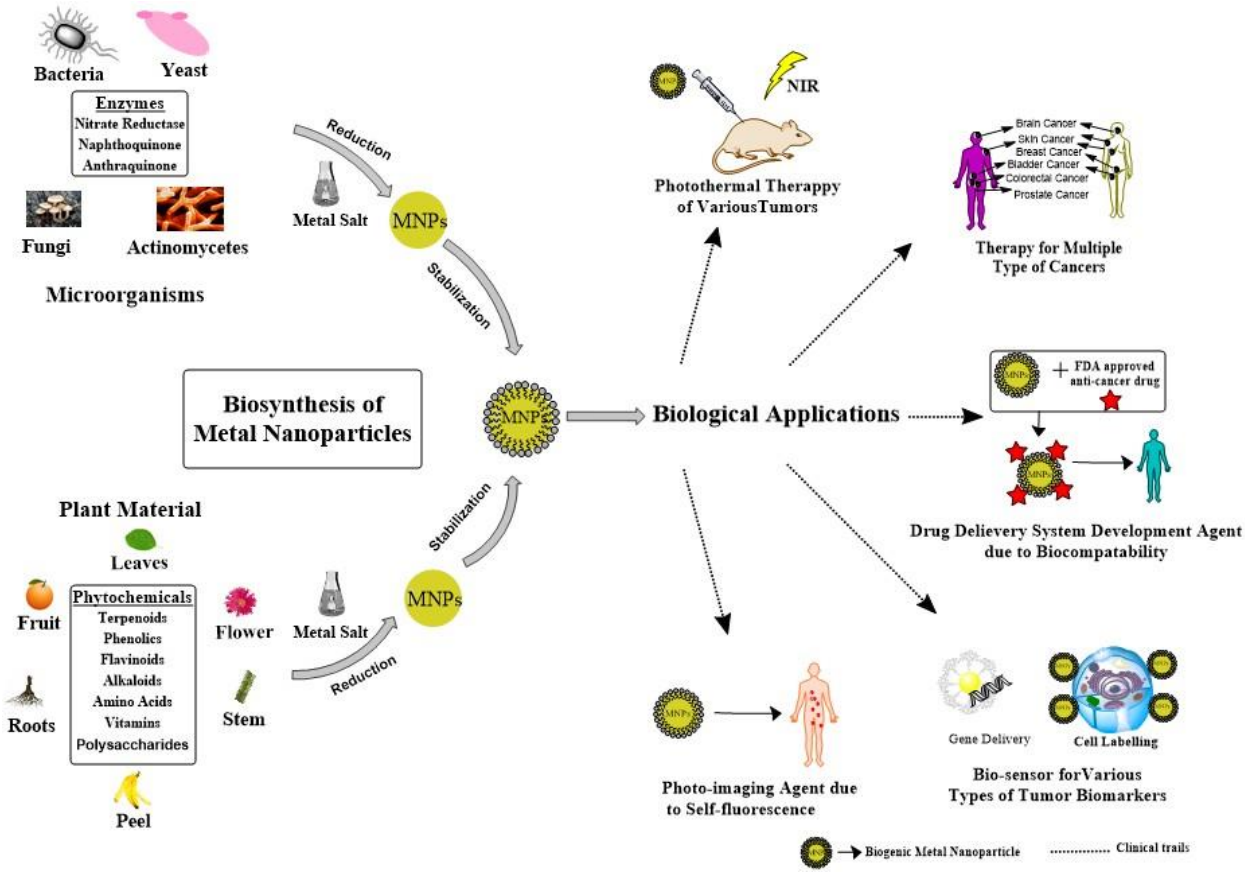
Internal Medicine 2019
EuroSciCon
8th Edition of International Conference on
Internal Medicine & Patient Care
Mar 25-26, 2019| Rome, Italy



Multifunctional theranostic applications of biocompatible green synthesized Colloidal nanoparticles

Muhammad Ovais (Chinese Academy of Sciences (CAS), Beijing, China)

Nanoscience and technology has played vital role in developing more effective treatment strategies for many diseases. However, the toxicity, high cost and nanoparticles (NPs) production complexity are some of the major issues that hinder the use of existing nanomedicine. Green synthesis of biogenic NPs from plants and microbial sources has become an emerging field due to their safer, eco-friendly, simple, fast, energy efficient, low-cost and less toxic nature. The interface of medicinal plants and nanotechnology has presented exciting horizons to engineer material of interest. Our group has successfully utilized various medicinal plants for the biosynthesis of metal and metal oxide nanoparticles. The aqueous extracts of Sageretia thea were used for the biosynthesis of zinc oxide, nickel oxide, iron oxide, cobalt oxide and lead oxide nanoparticles. Other plants which were used for the biosynthesis of various metal oxides are Callistemon viminalis, Tecoma stans, Fagonia indica and Silybum marianum. In addition, medicinal plants like Olax nana, Indigofera herantha, and Teucrium stocksianum were explored for the biosynthesis of silver and gold nanoparticles. The as synthesized nanoparticles were characterized using diverse techniques like XRD (X-ray diffraction), FTIR (Fourier Transformed Infrared Spectroscopy), UV-Vis (Ultraviolet absorption), Raman scattering, EDS (Energy Dispersive X-ray spectroscopy), SAED (Selected Area Electron Diffraction), HR-TEM (High Resolution Transmission Electron Microscopy), HR-SEM (High Resolution Scanning Electron Microscopy) etc. Applications studied are the anticancer, antileishmanial, antioxidant, antibacterial, antifungal, enzyme inhibition (Cholinesterase, Protein kinase etc.). Molecular docking studies of various metal oxide nanoparticles with targeted proteins are also performed. The in silico results correlated the in vitro findings. We have further extended our work to the biosynthesis of metal and metal oxide nanoparticles from bacteria and fungi isolated from harsh environments. Anticipating all of the challenges, we hope that biogenic NPs may become potential theranostic agents in the near future.



Biography

Muhammad Ovais completed his MPhil-Biotechnology degree in 2017 with research distinction from Quaid-i-Azam University, Pakistan. Currently he is perusing Ph.D. degree under the supervision of Prof. Chen Chunying. His current research interest lies in the development of novel nano-delivery systems for cancer immunotherapy. He owns to his credit over 30 SCI-indexed peer reviewedpapers.

Presenting author details

Muhammad Ovais
Doctoral Research Scholar at CAS Key Lab for Biomedical Effects of Nanomaterials and Nanosafety, National Center for Nanoscience and Technology (NCNST).
University of Chinese Academy of Sciences, Beijing 100190 PR China.
Email: movais@bs.qau.edu.pk ; Cell: +86-17180052750
ORCID: orcid.org/0000-0002-8104-1589

Recent Publications

Ovais M, Khalil AT, Islam NU, Ahmad I, Ayaz M, Saravanan M, Shinwari ZK, Mukherjee S. Role of plant phytochemicals and microbial enzymes in biosynthesis of metallic nanoparticles. *Applied Microbiology and Biotechnology.* 2018, DOI: 10.1007/s00253-018-9146-7

Ovais M, Khalil AT, Raza A, Islam NU, Ayaz M, Saravanan M, Ali M, Ahmad I, Shahid M, Shinwari ZK. Multifunctional theranostic applications of biocompatible green-synthesized colloidal nanoparticles. *Applied Microbiology and Biotechnology.* 2018, DOI: 10.1007/s00253-018-8928-2

Ovais M, Ahmad I, Khalil AT, Mukherjee S, Javed R, Ayaz M, Raza A, Shinwari ZK. Wound healing applications of biogenic colloidal silver and gold nanoparticles: recent trends and future prospects. *Applied Microbiology and Biotechnology.* 2018, DOI: 10.1007/s00253-018-8939-z

Ovais M, Raza A, Naz S, Islam NU, Khalil AT, Ali S, Khan MA, Shinwari ZK "Current state and prospects of the phytosynthesized colloidal gold nanoparticles and their applications in cancer theranostics" *Applied Microbiology and Biotechnology*, 2017, DOI: 10.1007/s00253-017-8250-4

Ovais M, Khalil AT, Raza A, Khan MA, Ahmad I, Islam NU, Saravanan M, Ubaid MF, Ali M, Shinwari ZK "Green synthesis of silver nanoparticles via plant extracts: beginning a new era in cancer theranostics." *Nanomedicine*, 2016, DOI: 10.2217/nnm-2016-0279

Khalil AT, **Ovais M,** Ullah I, Ali M, Shinwari ZK, Maaza M. "Sageretia thea (Osbeck.) mediated synthesis of ZnO nanoparticles and its biological applications." *Nanomedicine*, 2017, DOI: 10.2217/nnm-2017-0124

Khalil AT, **Ovais M,** Ullah I, Ali M, Khan Shinwari ZK. "Sageretia thea (Osbeck.) modulated biosynthesis of NiO nanoparticles and their invitro pharmacognostic, antioxidant and cytotoxic potential." *Artificial cells, nanomedicine and biotechnology*, 2017, DOI: 10.1080/21691401.2017.1345928

Khalil AT, **Ovais M,** Ullah I, Ali M, Shinwari ZK, Maaza M. "Biosynthesis of iron oxide (Fe2O3) nanoparticles via aqueous extracts of Sageretia thea (Osbeck.) and their pharmacognostic properties." *Green Chemistry Letters and Reviews*, 2017, DOI: 10.1080/17518253.2017.1339831

Khalil AT, **Ovais M,** Ullah I, Ali M, Shinwari ZK, Maaza M. "Physical properties, biological applications and biocompatibility studies on biosynthesized single phase cobalt oxide (Co3O4) nanoparticles via Sageretia thea (Osbeck.)." *Arabian Journal of chemistry*, 2017, DOI: 10.1016/j.arabjc.2017.07.004

Barabadi H, **Ovais M,** Shinwari ZK, Saravanan M. "Anticancer Green Bionanomaterials: Present Status and Future Prospects." *Green Chemistry Letters and Reviews*, 2017, DOI: 10.1080/17518253.2017.1385856

Khalil AT, **Ovais M,** Ullah I, Ali M, Shinwari ZK, Maaza M. "Bioinspired synthesis of pure massicot phase lead oxide nanoparticles and assessment of their biocompatibility, cytotoxicity and in-vitro biological properties." *Arabian Journal of chemistry*, 2017, DOI: 10.1016/j.arabjc.2017.08.009