



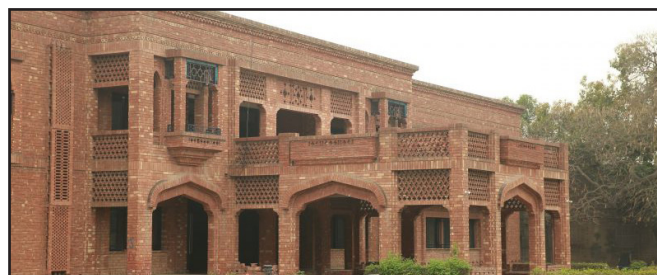
Effect of UV-C on Morus Macrourea-Mediated Biosynthesis and Clinical Activities of Metallic (Ag and ZnO) and Bimetallic (Ag-ZnO) Nanoparticles

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Abstract:

Nano-revolution based on the green synthesis of nanomaterials is uprising all zones of human life, modeling nanotechnology a propitious platform for various biomedical applications. In this study, biocompatible monometallic (AgNPs and ZnONPs) and bimetallic Ag-ZnONPs were synthesized by using the leave extract of Morus Macrourea under the irradiation of UV-C light and were further characterized and evaluated for their anti-diabetic and anti-glycation activities. Ultraviolet-visible spectroscopy of synthesized NPs presented a distinctive surface plasmon bands for all types of synthesized NPs. SEM analysis revealed a variety of shapes and sizes of control and UV-mediated NPs. FTIR showed the presence of polyphenols, carboxylic acid and amines that were primarily accountable for reduction and stabilization of synthesized NPs. In addition, EDX study gave strong justifications of the productive formation of NPs. UV-C mediated NPs showed well defined characteristic shapes with more dispersed particle distribution and reduced size as compared to their respective controls. In case of clinical activities, the highest anti-diabetic activity (67.77 ± 3.29 against α -amylase and 36.43 ± 2.77 against α -glucosidase) and anti-glycation activity (37.68 ± 3.34 against Pentosidine-Like AGEs and 67.87 ± 2.99 against Vesperlysine-Like AGEs) was shown by UV-mediated AgNPs. Whereas, the highest biocompatibility ($IC_{50}=24.13 \pm 1.68$ μ g/ml against Brine Shrimp and 2.48 ± 0.32 % hemolysis of human red blood cells) was shown by UV-mediated ZnONPs. The present work highlighted the positive effects of UV-C light on the physico-chemical properties as well clinical activities of NPs.



Biography:

Sumaira Anjum has completed his PhD at the age of 33 years from Quaid-e-Azam University Islamabad and currently working as Assistant Professor at Department of Biotechnology, Kinnaird College for Women, Lahore Pakistan. She has published more than 14 papers and 5 book chapters in reputed journals.

Publication of speakers:

1. Synergistic effects of drought stress and photoperiods on phenology and secondary metabolism of *Silybum marianum*; A Zahir, BH Abbasi, M Adil, S Anjum, M Zia.
2. Thidiazuron-enhanced biosynthesis and antimicrobial efficacy of silver nanoparticles via improving phytochemical reducing potential in callus culture of *Linum usitatissimum* L.; S Anjum, BH Abbasi
3. Biomimetic synthesis of antimicrobial silver nanoparticles using in vitro-propagated plantlets of a medicinally important endangered species: *Phlomis bracteosa*; S Anjum, BH Abbasi
4. Effects of photoperiod regimes and ultraviolet-C radiations on biosynthesis of industrially important lignans and neolignans in cell cultures of *Linum usitatissimum* L.(Flax); S Anjum, BH Abbasi, J Doussot, A Favre-Réguillon, C Hano.
5. Trends in accumulation of pharmacologically important antioxidant-secondary metabolites in callus cultures of *Linum usitatissimum* L.; S Anjum, BH Abbasi, C Hano

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