Abstract

Presentation title: <u>Biosynthesis of Silver Nanoparticles Using *Tridax procumbens* Aqueous Leaf Extract and Their Antiproliferative Activity Against Cancer Cell Lines</u>

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Presentation type: Poster presentation

Abstract (250-300 words):

Natural products are being looked forward for a sustainable option over chemical drugs, Chemical drugs known to have severe side effects and/or drug resistance. Green synthesis of metal-nanoparticles using medicinal plants extract is gaining attention as the active phytochemicals are natural products. Present study describes antiproliferative activity of silver nanoparticles synthesized using the aqueous leaf extract of *Tridax procumbens* that served as a reducing and capping agent during synthesis of silver nanoparticles. The biosynthesized *T. procumbens* silver nanoparticles (TNPs) were characterized using UV-visible spectroscopy, dynamic light scattering (DLS), Fourier transform infrared (FTIR) spectroscopy, X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), and atomic force microscopy (AFM). The phytochemicals responsible for the reduction and capping of biosynthesized TNPs were deciphered through separation and mass spectrometry. Anticancer activity of TNP was demonstrated on a few selected cell lines; A549, A432 and B16 F10 immortal, while HEK293, a control finite cell line. Cellular cytotoxicity assay demonstrated that TNPs exhibits antiproliferative activity against the A549, A431 and B16F10 with IC50 values 42.70ug/ml, 2.45ug/ml and 2.64ug/ml, respectively. Molecular characterization of TNPs synthesized using crude extract and HPLC fraction-11 showed presence of differential phytochemicals. The HPLC fraction originated TNPs showed presence of fosinopril and reducing agents such as peptides (Gln-Gly-Ala, Ser-Pro-Asn,

and Leu-Met), terpenoids (lupanyl acid, tiamulin), polyphenol (peucenin), and alkaloids (8′,10′-dihydroxydihydroergotamine, carteolol) phytochemicals, suggesting potential role to the dipeptides/tripeptides in cancer therapy. To decipher antiproliferative mechanism exerted by the TNP in A549 cells RNA sequencing approach. The search for potential therapeutic targets was achieved via transcriptomics. TNPs demonstrated to inhibit the proliferation, migration, and invasion of A549 cells several key candidate genes of functional relevance for the anti-cancer activity were identified. Bioinformatics analysis shows that these differentially express gene involved in various cellular processes and pathways like Cell Cycle and Apoptosis, Calcium Signaling Pathway, Mineral Absorption (Metallothionein), Collagen (Protein Digestion & absorption), Autophagy and mTOR signaling pathway. Understanding nanoparticle-bio interactions in living cells entails an understanding of particles' dynamic behavior during cellular absorption, intracellular traffic, and mutual interactions with cell organelles.The biosynthesized *T. procumbens* AgNPs can be further exploited as a potential anticancer candidate agent.

KEYWORDS- Green synthesis, Anticancer, Nanoparticles, Natural product, Phytochemicals.

Biography (150-200 words):

Makwana Nilesh. "Expertise in Cancer Biology and Microbiology for the Betterment of Mankind." Focuses on cancer biology, specifically exploring medicinal phytochemicals for the treatment of lung and skin cancer. Specializes in the study of Multi-Drug Resistant (MDR) and Extended Spectrum Beta-Lactamase (ESBL) strains, demonstrating a comprehensive understanding of antimicrobial resistance treatment and cure.