Amino acids-capped silver nanoconjugates (AgNCs); safety profiling and their *in-Vitro* and *in Vivo* antioxidant potential

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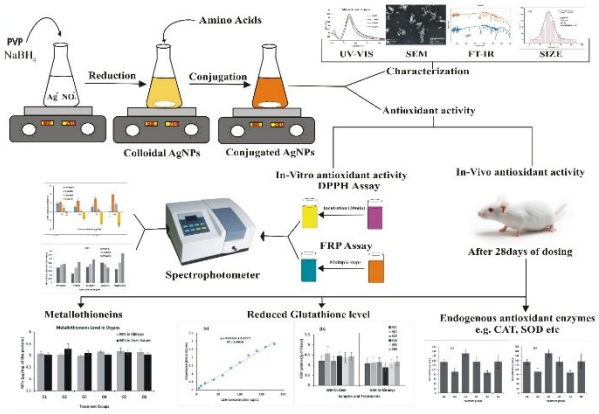
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Abstract (300-word limit)

Recent demands and research on nanomaterials depict that there is a need to develop safer and less toxic nanomaterials (NMs) for different biological applications. Modifying the surface chemistry of commonly used NMs using several biomolecules/conjugates may revert the toxicity of various NMs. The current study has been designed to develop silver nanoconjugates (AgNCs) capped with different amino acids. Characterization of the same was performed by using various techniques, i.e., UV-Visible spectroscopy (UV-Vis), scanning electron microscopy (SEM), Fourier-transform infrared spectroscopy (FTIR), Dynamic light scattering (DLS). During *in vitro* analysis, L-tyrosine and L-cystine capped AgNCs exhibited antioxidant activity, while L-glycine capped AgNCs showed prooxidant activity. L-cystine and L-tyrosine capped AgNCs also demonstrated good *in vivo* results. The level of catalase (CAT), superoxide dismutase (SOD), reduced glutathione (GSH), and metallothioneins (MTs) in different organs was evaluated. It is concluded that newly developed nanoconjugates can be utilized as nano-tools for various applications. However, more detailed studies with resolution techniques for safety, the risk associated, and accuracy are needed for these nanoconjugates for specific biomedical uses.

Image



Recent Publications (minimum 5)

1. **Ditta, S. A.,** Yaqub, A., Ullah, R., & Tanvir, F. (2021). Evaluation of amino acids capped silver nanoconjugates for the altered oxidative stress and antioxidant potential in albino mice. *Journal of Materials Research*, 1-16.
2. **Ditta, S. A**., Yaqub, A., Tanvir, F., Ullah, R., Rashid, M., Bilal, M. (2021). A histopathological evaluation of amino acids-capped silver nanoconjugates (AgNCs) against cadmium-induced toxicity in albino mice. *Bioinspired, Biomimetic and Nanobiomaterials*, *(Accepted)*.
3. **Ditta, S. A.**, Yaqub, A., & Tanvir, F. (2021). Nanotechnology can Provide Therapeutic Agent by Targeting Molecular Structures of SARS-CoV-2 (COVID-19): A Mini-Review. *Letters in Drug Design & Discovery*, *18*(8), 755-763.
4. Yaqub, A., **Ditta, S. A**., Ashraf, K., Tanvir, F., Ali, S., Naz, M., ... & Ali, S. (2020). Biosensors for mercury and manganese ions by using biosynthesized silver nanoparticles. *Bioinspired, Biomimetic, and Nanobiomaterials*, *9*(4), 213-222.
5. Yaqub, A., Faheem, I., Anjum, K. M., **Ditta, S. A**., Yousaf, M. Z., Tanvir, F., & Raza, C. (2020). Neurotoxicity of ZnO nanoparticles and associated motor function deficits in mice. *Applied Nanoscience*, *10*(1), 177-185.
6. Yaqub, A., Malkani, N., Shabbir, A., **Ditta, S. A**., Tanvir, F., Ali, S., & Ullah, R. (2020). Novel Biosynthesis of Copper Nanoparticles Using Zingiber and Allium sp. with Synergic Effect of Doxycycline for Anticancer and Bactericidal Activity. *Current Microbiology*, 1-13.
7. Yaqub, A., Anjum, K. M., **Ditta, S. A**., Tanvir, F., Yousaf, M. Z. (2019). Post-exposure histopathological studies of albino mice liver to silver nanoparticles prepared from *(Ocimum tenuiflorum)* green synthesis method. *THE JAPS. 29*(6), 1587-1595.
8. Yaqub, A., **Ditta, S. A**., Anjum, K. M., Tanvir, F., Malkani, N., & Yousaf, M. Z. (2019). Comparative Analysis of Toxicity Induced by Different Synthetic Silver Nanoparticles in Albino Mice. *BioNanoScience,* 9(3), 553-563.



Biography (150-word limit)

Mr. Sarwar AD has his expertise in ecotoxicology and Nanobiotechnology. He has been working on the synthesis and analyses of secure and safer nanomaterials (NMs) for different biomedical applications. He has experience in the synthesis and characterization of metallic nanomaterials by using various routes or procedures. Further, he has been utilizing these nanomaterials in Model animals for their altered oxidative stress and other related parameters. He has been serving in the education sector for more than ten years and is experienced in teaching and administration. He is working as a research scholar in the department of Zoology Government College University Lahore, Pakistan. He has published his research in National (Pakistan) and International Impact factor journals.

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Notes/Comments:
Thanks

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Session name/ number: **Track 5: Nanomaterials Safety and regulations** (5.1, 5.2, 5.5)
Category: Oral presentation