



Article

Synthesis of Metal Nanoparticles via *Pulicaria undulata* and an Evaluation of Their Antimicrobial, Antioxidant, and Cytotoxic Activities

Yasser A. El-Amier ^{1,*}, Balsam T. Abduljabbar ¹, Mustafa M. El-Zayat ^{2,3}, Tushar C. Sarker ⁴, and Ahmed M. Abd-ElGawad ⁵

¹ Botany Department, Faculty of Science, Mansoura University, Mansoura 35516, Egypt; yasran@mans.edu.eg (Y.A.E.-A), Dr.Balsamtareq@gmail.com (B.T.A.)

² Department of Biology, Faculty of Science, New Mansoura University, New Mansoura City 35511, Egypt; mustafa.mohsen@nmu.edu.eg

³ Unit of Genetic Engineering and Biotechnology, Mansoura University, Mansoura 35516, Egypt;

⁴ Texas A&M AgriLife Research Center, Overton, TX 75684, USA, tushar.sarker@ag.tamu.edu

⁵ Plant Production Department, College of Food & Agriculture Sciences, King Saud University, P.O. Box 2460 Riyadh 11451, Saudi Arabia, aibrahim2@ksu.edu.sa

* Correspondence: yasran@mans.edu.eg; Tel.: (+201017229120)

Citation: El-Amier, Y.A.;
Abduljabbar, B.T.; El-Zayat, M.M.;
Sarker, T.C.; Abd-ElGawad, A.M.
Synthesis of Metal Nanoparticles via
Pulicaria undulata and an Evaluation
of Their Antimicrobial, Antioxidant,
and Cytotoxic Activities. *Chemistry*
2023, 5, 2075–2077. <https://doi.org/10.3390/chemistry5040141>

Academic Editor: Sofia Lima

Received: 8 August 2023

Revised: 16 September 2023

Accepted: 25 September 2023

Published: 26 September 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland.
This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

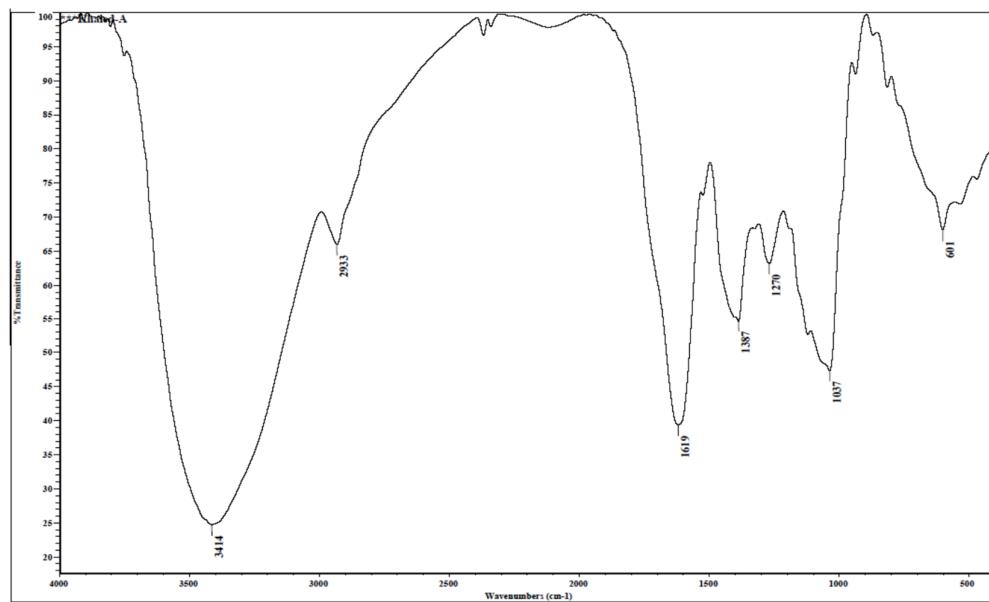


Figure S1. The FT-IR spectral chart of *P. undulata* extract.

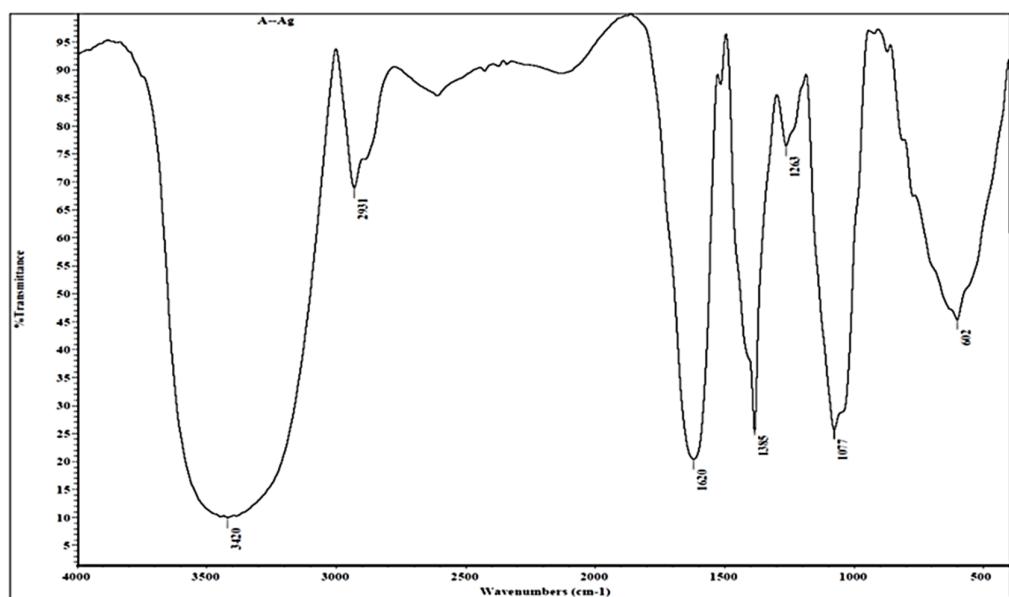


Figure S2. The FT-IR spectral chart of *P. undulata* extract -Ag NPs.

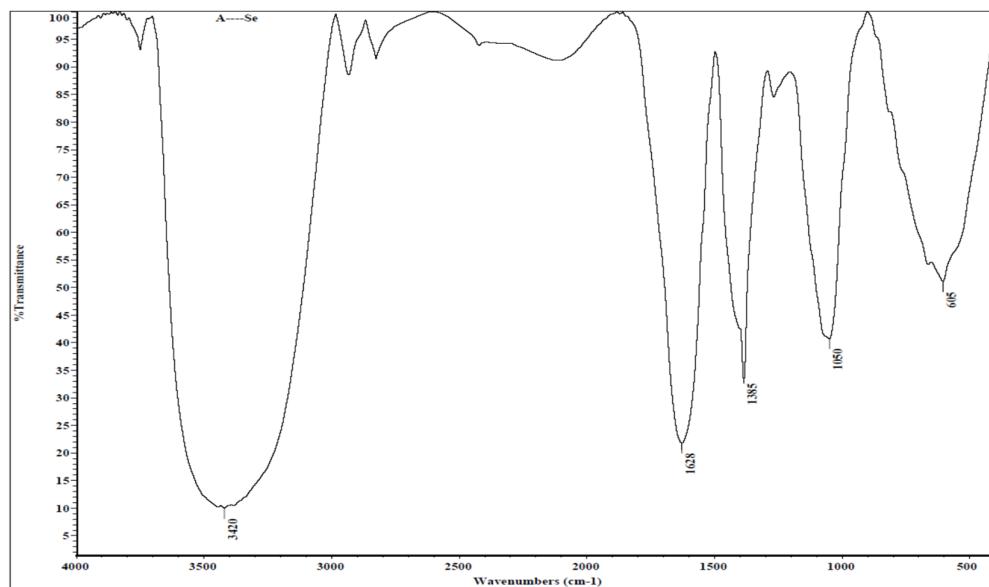


Figure S3. The FT-IR spectral chart of *P. undulata* extract -SeO₂ NPs.

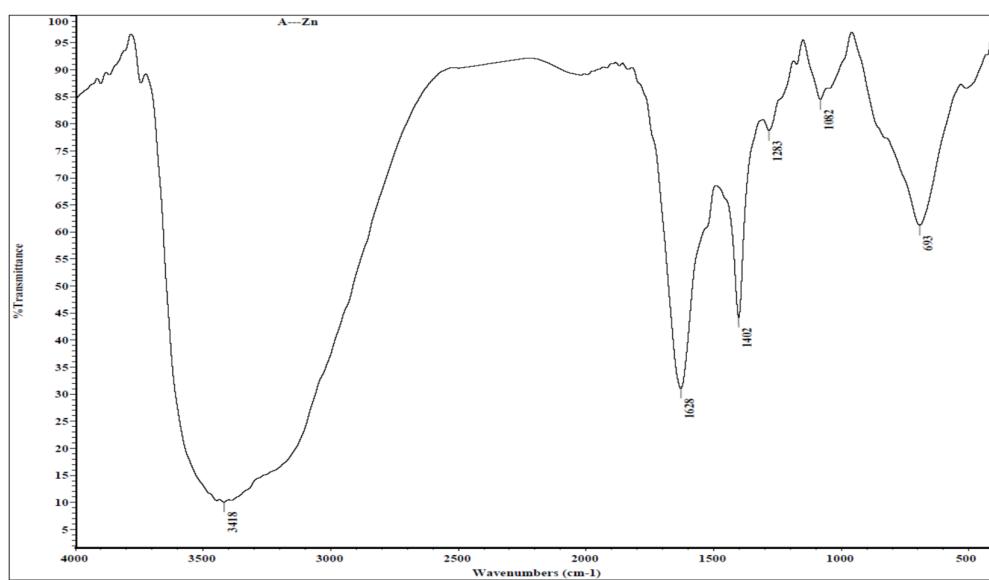


Figure S4. The FT-IR spectral chart of *P. undulata* extract -ZnO NPs.