

Review of: "Synthesis, Characterization and Ameliorative Effect of Iron Oxide Nanoparticles on Saline-Stressed Zea Mays"

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Potential competing interests: No potential competing interests to declare.

Review report

I am happy to review this manuscript (Qeios ID: 75AS4Y), "Synthesis, Characterization, and Ameliorative Effect of Iron Oxide Nanoparticles on Saline-Stressed Zea Mays." The authors are trying to address FeONPs' role in salinity stress tolerance. Results were interesting and elucidating regarding the application of FeONPs to maintain the oxidative stress and antioxidant defense homeostasis of *Diodella sarmentosa*. However, I have noticed some gaps in the methodology. Therefore, I suggest that this manuscript needs to be revised thoroughly before acceptance. Please address the following issues.

1. Page No 3: "A taxonomist from the Department of Forestry and Wildlife at the Federal University of Technology Owerri identified the fresh leaves of *Diodella sarmentosa* (SW) that had been obtained from the university's premises". In this sentence, please provide the taxonomist details and what he/she identified? Please clarify.
2. Page No 3: "A 200 mL aqueous solution containing five grams of the pulverized dried leaves was heated to 100°C for 1 hour. The solution was heated, filtered, and evaporated until it was completely dry". Please reveal the evaporation method/procedure you followed because your solvent is aqueous. Readers will be happy to follow your procedure.
3. Page No 4: Authors mentioned "The leaf extract filtrate was then mixed with a 0.02 M (1.08 g) solution of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ to form a yellow solution. Iron oxide nanoparticles (FeONPs) were formed when the solution was heated to 80 °C for 30 minutes while being constantly stirred". The proposed single point concentration of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ (0.02 M/1.08 g), temperature (80 °C), and time (30 min.) are used for the synthesis of FeONPs. If these conditions are only optimal for the synthesis of FeONPs, please provide other experimental reaction conditions and results. For example, at lower temperatures and higher temperatures, and with lower/higher concentrations of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$. If it is "NO," please cite the methods you followed.
4. Genesys UV-VIS Spectrophotometer. Please provide the manufacturer/company details of this instrument.
5. What is the concentration of iron in the filtrate of *D. sarmentosa*? I hope the plant extract also contains iron. Please provide the EDX spectra or elemental composition of the crude extract.
6. Page No 5: The soil was collected from a non-contaminated area on the premises of FUTO. Please elaborate on the non-contaminated area selection procedure for the soil collection.
7. Chlorophyll a and b were determined by UV-visible spectrophotometer, but there is no spectral data.
8. Please elaborate on the methods for estimation of chlorophyll a/b and total chlorophyll content from spectral data.

9. Page No 7: All figure captions need to be elaborated in detail.
10. Page No 11: Figure 5 quality is poor. Please update the high-quality figure.