

**Review Form 1.7**

Journal Name:	<b>Journal of Advances in Biology &amp; Biotechnology</b>
Manuscript Number:	<b>Ms_JABB_118423</b>
Title of the Manuscript:	<b>Morphological and Structural Characterization of Spirulina-Mediated Titanium Dioxide Nanoparticles</b>
Type of the Article	

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**PART 1: Review Comments**

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p><b>Compulsory</b> REVISION comments</p> <p><b>1. Is the manuscript important for scientific community?</b> (Please write few sentences on this manuscript)</p> <p><b>2. Is the title of the article suitable?</b> (If not please suggest an alternative title)</p> <p><b>3. Is the abstract of the article comprehensive?</b></p> <p><b>4. Are subsections and structure of the manuscript appropriate?</b></p> <p><b>5. Do you think the manuscript is scientifically correct?</b></p>	<p>This manuscript is important for the scientific community because it presents an environmentally friendly method for the synthesis of titanium dioxide nanoparticles (TiO<sub>2</sub>NPs) using Spirulina platensis extract as a reducing and capping agent. The research results showed that the resulting nanoparticles had a well-defined size and structure, and contained various important elements which were confirmed through SEM, TEM and EDAX analysis. These findings open new opportunities in the application of nanotechnology, especially in the fields of biomedicine and sericulture, and emphasize the potential of sustainable biogenic synthesis methods.</p> <p>Yes, the title "Morphological and Structural Characterization of Spirulina-Mediated Titanium Dioxide Nanoparticles" is appropriate for the article. The title accurately reflects the focus of the study, which is on the morphological and structural analysis of TiO<sub>2</sub> nanoparticles synthesized using Spirulina platensis. The detailed characterization using SEM, TEM, and EDAX analyses is well-summarized, making the title concise and relevant to the content of the research.</p> <p>The abstract of the article is well-developed but can benefit from some minor revisions to enhance clarity and flow. Here is a slightly revised version:  <b>Abstract</b>            In the present study, the formation of Spirulina platensis-mediated TiO<sub>2</sub> nanoparticles (TiO<sub>2</sub>NPs) was confirmed by a noticeable hue shift from white to light yellow. Scanning Electron Microscopy (SEM) analysis revealed spherically distributed nanoparticles with sizes between 90 and 150 nm, while Transmission Electron Microscopy (TEM) analysis further disclosed a hexagonal structure. Energy Dispersive X-ray Analysis (EDAX) identified the elemental composition, with titanium peaks appearing at 4.5 to 5 keV, carbon peaks at 0.5 keV, oxygen peaks at 0.4 to 1.0 keV, silica peaks at 1.7 to 2.0 keV, zinc peaks at 8.0 keV, copper peaks at 7 keV, potassium peaks at 4 keV, phosphorus peaks at 3 keV, and iron peaks at 6 keV. These comprehensive findings confirm the successful synthesis of well-defined Spirulina platensis-mediated TiO<sub>2</sub> nanoparticles and provide valuable insights into their structural and elemental characteristics.  <b>Keywords:</b> Spirulina, TiO<sub>2</sub> NPs, SEM, TEM, EDAX analysis            This revision maintains all key details from the original while improving readability and coherence.</p> <p>The subheadings and structure of the manuscript seem mostly appropriate and well-organized for a scientific paper.</p> <p>The manuscript appears to be scientifically sound, but there are several areas that should be examined in more detail to confirm its validity:  <b>Experimental Reproducibility:</b> Ensure that the procedures described for the synthesis and characterization of TiO<sub>2</sub> nanoparticles are detailed enough for reproducibility. For example, the concentration of reactants, temperatures, and duration of processes are provided, but the exact stirring conditions and any potential variations should be clear.  <b>Characterization Techniques:</b> The use of SEM, TEM, and EDAX is appropriate for characterizing nanoparticles. However, it would be beneficial to include additional characterization methods such as X-ray diffraction (XRD) for crystallographic information and UV-Vis spectroscopy for optical properties, which can provide more comprehensive data on the TiO<sub>2</sub> nanoparticles.  <b>Size Discrepancy:</b> The manuscript notes that the particle sizes measured by SEM (90-150 nm) and TEM (50-60 nm) are different. This discrepancy should be addressed, as SEM and TEM should give relatively consistent size measurements. Possible explanations could include differences in sample preparation, measurement techniques, or interpretations of the images.  <b>Elemental Composition:</b> The EDAX analysis provides valuable information about the elemental composition. However, it is important to ensure that the presence of elements like silica, zinc,</p>	

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<p>6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.</p> <p><b><u>(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)</u></b></p>	<p>copper, and others is not due to contamination from the synthesis process or the instruments used.</p> <p>Control Experiments: It is important to mention if control experiments were performed to compare the synthesis without <i>Spirulina platensis</i> to ensure that the observed effects are due to the presence of the bio-reductant.</p> <p>Literature Comparison: The manuscript compares its findings with previous studies, which is good practice. However, it would be more compelling if it included a discussion of how these findings contribute to or differ from the current body of knowledge.</p> <p>Applications and Future Work: The manuscript mentions potential applications but could benefit from a more detailed discussion on how these TiO<sub>2</sub> nanoparticles could be utilized in specific biological or technological applications. Additionally, suggesting future work or experiments could provide direction for further research.</p> <p>Statistical Analysis: Including statistical analysis of the data, such as the size distribution of the nanoparticles, would strengthen the manuscript by providing a quantitative measure of the variability and reliability of the results.</p> <p>Graphical Abstracts and Tables: Including graphical abstracts or more detailed tables summarizing the experimental conditions and results would enhance the clarity and accessibility of the manuscript.</p> <p>Overall, while the manuscript seems to present valid scientific findings, addressing the points above would improve its rigor and reliability.</p> <p>The references in your abstract appear to cover a range of topics related to nanotechnology, sericulture, and green synthesis of nanoparticles.</p>	
<p><b>Minor</b> REVISION comments</p> <p>1. Is language/English quality of the article suitable for scholarly communications?</p>	<p>The quality of the article in English is mostly suitable for scientific communication,</p>	
<p><b>Optional/General</b> comments</p>		

**PART 2:**

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

**Reviewer Details:**

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