

### Review Form 3

Journal Name:	<a href="#">Journal of Advances in Biology &amp; Biotechnology</a>
Manuscript Number:	Ms_JABB_127827
Title of the Manuscript:	"Possibility Of Biofortification By Selenium For Abiotic Stress Management Using Effective Microorganisms"
Type of the Article	Review Article

#### General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

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#### PART 1: Comments

	Reviewer's comment	Author's Feedback (Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<b>Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.</b>	The manuscript titled "Possibility of Biofortification by Selenium for Abiotic Stress Management Using Effective Microorganisms" offers an in-depth exploration of selenium biofortification and its potential to improve crop quality and stress tolerance. It covers important topics such as the role of microbes, selenium's biochemical pathways, and its applications in sustainable agriculture. However, the manuscript needs improvements in structure, language, and content to eliminate redundancies, enhance clarity, and align with scientific conventions.	
<b>Is the title of the article suitable? (If not please suggest an alternative title)</b>	<b>Yes, the title is suitable</b>	
<b>Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.</b>	<p>The abstract of the article is comprehensive and effectively summarizes the key aspects of the review. However, to enhance clarity, engagement, and alignment with scientific conventions, the following suggestions for additions and refinements can be considered:</p> <p><b>Suggestions:</b></p> <ol style="list-style-type: none"> <li>1. Add a brief mention of the article's specific objectives, such as discussing the role of selenium biofortification in abiotic stress management and the potential application of effective microorganisms (selenorhizobacteria) for improving plant nutrition and resilience.</li> <li>2. such as the unique biotechnological approaches involving microorganisms for selenium biofortification.</li> <li>3. Mention the broader implications of selenium biofortification, particularly its role in addressing global food security and combating micronutrient deficiencies.</li> <li>4. Specify whether the review primarily focuses on theoretical frameworks, experimental evidence, or practical applications of selenium biofortification and stress management.</li> <li>5. Some points, such as the benefits of selenium for human health, are briefly reiterated. Streamlining the abstract to focus on core themes will enhance readability.</li> </ol> <p><b>Example Revised Abstract:</b> Selenium biofortification aims to increase selenium accumulation or bioavailability in edible crops, tackling the global issue of hidden hunger for essential micronutrients. This review examines the vital role of selenium in human health, its interactions within soil-crop systems, and its potential to alleviate abiotic stresses in plants. By utilizing selenorhizobacteria as biotechnological tools, selenium biofortification presents an innovative method for enhancing crop nutrition and quality. The</p>	

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	<p>review emphasizes key mechanisms involved in selenium uptake, its function in activating plant antioxidant systems, and its dual role as both a beneficial nutrient and a prooxidant. Furthermore, it explores microbial contributions to selenium mobility and bioavailability, offering practical strategies to bolster crop resilience and productivity. This comprehensive analysis highlights the importance of selenium biofortification in fostering sustainable agriculture and improving global health outcomes.</p>	
<p><b>Is the manuscript scientifically correct? Please write here.</b></p>	<p>The provided content indicates that the manuscript is scientifically grounded and addresses an important topic: the role of selenium biofortification in managing abiotic stress with the aid of effective microorganisms. However, to enhance its scientific accuracy and overall impact, I have a few observations and recommendations:</p> <p><b>Positive Aspects:</b></p> <ol style="list-style-type: none"> <li><b>1. Relevance and Importance:</b> The manuscript highlights a crucial topic with wide implications for sustainable agriculture, food security, and human health, focusing on selenium biofortification, a recognized strategy to combat micronutrient deficiencies.</li> <li><b>2. Comprehensive Review:</b> It thoroughly examines the multifaceted roles of selenium, including its benefits in plant growth, stress management, and human health, supported by references to scientific studies.</li> <li><b>3. Use of Scientific Methods:</b> The manuscript cites robust mechanisms, such as selenium metabolism by microorganisms, antioxidant pathways, and selenium's interaction with abiotic stressors, reinforcing its scientific basis.</li> <li><b>4. Biotechnological Focus:</b> The discussion on using microorganisms like selenorhizobacteria for biofortification and stress management reflects the manuscript's innovative approach.</li> </ol> <p><b>Areas for Improvement:</b></p> <ol style="list-style-type: none"> <li><b>1. Consistency in Terminology</b> Some terms, such as "selenorhizobacteria" and "selenometabolites," should be consistently defined and used throughout to avoid confusion.</li> <li><b>2. Critical Analysis</b> While the manuscript effectively summarizes existing knowledge, it could benefit from deeper critical analysis of challenges, such as potential toxicity of selenium at high concentrations or limitations in its uptake and bioavailability.</li> <li><b>3. Clarity in Data Presentation</b> Tables and figures should provide a clear summary of the findings or recommendations. Ensuring that the data align with the manuscript's objectives and discussion would enhance its scientific rigor.</li> <li><b>4. Citation and Evidence</b> Ensure all claims are supported by appropriate references. For example, statements about selenium's role in specific metabolic processes or stress pathways should directly reference experimental studies.</li> <li><b>5. Mechanistic Insights</b> The manuscript discusses selenium's benefits but could delve deeper into molecular mechanisms, such as the role of selenium in redox balance or gene expression related to stress tolerance.</li> </ol> <p><b>Overall Assessment:</b> The manuscript is scientifically correct in its foundational arguments and concepts. With additional refinement in data presentation, critical analysis, and depth of discussion on molecular mechanisms, it would align well with high scientific standards. If these suggestions are addressed, the manuscript could make a significant contribution to the field.</p>	
<p><b>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</b></p>	<p>The manuscript utilizes a significant number of references, including many from reputable sources, to support its claims. However, based on the extracted content, I have specific observations and suggestions regarding these references:</p> <p><b>Suggestions for Improvement</b></p> <p><b>Recency</b> Although the manuscript includes some recent references, such as studies from 2020 and 2021, it also cites a few works that are over a decade old. Including more recent studies from 2022 to 2024 would enhance the manuscript's relevance and scientific impact.</p> <p><b>Coverage of Emerging Techniques</b> Additional references discussing recent advancements in omics technologies (e.g., transcriptomics, proteomics, and metabolomics) applied to selenium biofortification and stress management could enhance the manuscript.</p> <p><b>Global Perspectives</b> Given selenium's uneven distribution globally, recent studies focusing on region-specific selenium biofortification practices and their socio-economic impacts could add valuable insights.</p> <p><b>Gaps in References</b> -The role of nanotechnology in selenium delivery is briefly mentioned but could be supported with recent references discussing its effectiveness and challenges. -The microbial mechanisms of selenium transformation (e.g., via selenorhizobacteria) might benefit from references to cutting-edge studies on genetic and enzymatic pathways involved.</p> <p><b>Suggested Additional References</b> <b>On Selenium Biofortification and Nanotechnology</b> Reddy, M.K., Asthana, R., Debnath, S. <i>et al.</i> Nanofertilizers for Sustainable Crop Production: A Comprehensive Review. <i>BioNanoSci.</i> <b>14</b>, 1918–1939 (2024). <a href="https://doi.org/10.1007/s12668-024-01413-0">https://doi.org/10.1007/s12668-024-01413-0</a>.</p>	

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	<p>Mršćina, T., Praus, L., Száková, J., Kaplan, L., &amp; Tlustoš, P. (2024). Foliar selenium biofortification of soybean: The potential for transformation of mineral selenium into organic forms. <i>Frontiers in Plant Science</i>, 15, 1379877. <a href="https://doi.org/10.3389/fpls.2024.1379877">https://doi.org/10.3389/fpls.2024.1379877</a>.</p> <p>ul din, K., Naeem, M.S., Zulifqar, U., Albadrani, G.M., Waraich, E.A., Hussain, S. (2023). Nanoparticles Based Biofortification in Food Crops: Overview, Implications, and Prospects. In: Hasanuzzaman, M., Tahir, M.S., Tanveer, M., Shah, A.N. (eds) Mineral Biofortification in Crop Plants for Ensuring Food Security. Springer, Singapore. <a href="https://doi.org/10.1007/978-981-99-4090-5_8">https://doi.org/10.1007/978-981-99-4090-5_8</a>.</p> <p>El-Ramady, H.; Faizy, S.E.-D.; Abdalla, N.; Taha, H.; Domokos-Szabolcsy, É.; Fari, M.; Elsakhawy, T.; Omara, A.E.-D.; Shalaby, T.; Bayoumi, Y.; et al. Selenium and Nano-Selenium Biofortification for Human Health: Opportunities and Challenges. <i>Soil Syst.</i> <b>2020</b>, <i>4</i>, 57. <a href="https://doi.org/10.3390/soilsystems4030057">https://doi.org/10.3390/soilsystems4030057</a>.</p> <p>Samynathan, R., Venkidasamy, B., Ramya, K., Muthuramalingam, P., Shin, H., Kumari, P. S., Thangavel, S., &amp; Sivanesan, I. (2023). A recent update on the impact of nano-selenium on plant growth, metabolism, and stress tolerance. <i>Plants</i>, 12(4), 853. <a href="https://doi.org/10.3390/plants12040853">https://doi.org/10.3390/plants12040853</a>.</p> <p>Khan, Z., Thounaojam, T.C., Chowdhury, D. <i>et al.</i> The role of selenium and nano selenium on physiological responses in plant: a review. <i>Plant Growth Regul</i> <b>100</b>, 409–433 (2023). <a href="https://doi.org/10.1007/s10725-023-00988-0">https://doi.org/10.1007/s10725-023-00988-0</a>.</p> <p><b>Omics in Selenium Research:</b> Arias-Borrego, A., Callejón-Leblic, B., Collado, M. C., Abril, N., &amp; García-Barrera, T. (2023). Omics insights into the responses to dietary selenium. <i>Proteomics</i>, 23(1), Article 202300052. <a href="https://doi.org/10.1002/pmic.202300052">https://doi.org/10.1002/pmic.202300052</a>.</p> <p><b>Microbial Interactions:</b> Liao, Q., Li, A.-M., Xing, Y., Liang, P.-X., Jiang, Z.-P., Liu, Y.-X., &amp; Huang, D.-L. (2024). Selenobacteria-mediated Se transformation and uptake involving the unique genetic code. <i>Frontiers in Plant Science</i>, 15, 1392355. <a href="https://doi.org/10.3389/fpls.2024.1392355">https://doi.org/10.3389/fpls.2024.1392355</a>.</p> <p>Hossain, A., Skalicky, M., Brestic, M., Maitra, S., Sarkar, S., Ahmad, Z., Vemuri, H., Garai, S., Mondal, M., Bhatt, R., Kumar, P., Banerjee, P., Saha, S., Islam, T., &amp; Laing, A. M. (2021). Selenium biofortification: Roles, mechanisms, responses and prospects. <i>Molecules</i>, 26(4), 881. <a href="https://doi.org/10.3390/molecules26040881">https://doi.org/10.3390/molecules26040881</a></p> <p><b>Recent Advances in Selenium Bioavailability</b> Liu, X., Cheng, H., Cheng, S. <i>et al.</i> Advances in research on influencing factors of selenium enrichment in plants. <i>Plant Growth Regul</i> <b>103</b>, 243–255 (2024). <a href="https://doi.org/10.1007/s10725-023-01107-9">https://doi.org/10.1007/s10725-023-01107-9</a>.</p>	
<p><b>Is the language/English quality of the article suitable for scholarly communications?</b></p>	<p>The language quality of the manuscript is generally suitable for scholarly communication, with clear and precise scientific explanations. However, there are areas where the writing could be refined to enhance clarity, flow, and professionalism. Below are detailed observations and suggestions:</p> <p><b>Strengths:</b></p> <ol style="list-style-type: none"> <li><b>Clear Terminology:</b> The manuscript effectively uses scientific terminology and concepts, which are well-suited for an academic audience. Terms such as "biofortification," "selenorhizobacteria," and "abiotic stress" are appropriately employed.</li> <li><b>Structured Presentation</b> The manuscript is organized into well-defined sections, which aids in understanding complex topics.</li> <li><b>Scholarly Tone</b> The writing maintains a formal tone, which is appropriate for a scientific article.</li> </ol> <p><b>Areas for Improvement:</b></p> <ol style="list-style-type: none"> <li><b>Repetition</b> Certain ideas, such as selenium's role in plant growth and its dual effects (beneficial and toxic), are repeated unnecessarily. Streamlining these sections can improve readability.</li> <li><b>Sentence Structure</b> Some sentences are lengthy and complex, which may hinder comprehension. Breaking these into shorter, more concise sentences can enhance clarity. -Example: "The fundamental mechanisms of selenium uptake, distribution, and metabolism, as well as any favorable or detrimental effects on plant physiology and plant performance under abiotic stressors, have all been covered in this study." -Revision: "This study examines selenium uptake, distribution, metabolism, and its effects on plant physiology and performance under abiotic stressors."</li> <li><b>Grammar and Syntax</b> A few grammatical errors and awkward phrases could be revised for fluency. For example: -Original: "The selenium content of grain was enhanced in plants co-inoculated with a combination of selenibacteria strains and <i>G. claroideum</i>." -Suggested: "Grain selenium content increased in plants co-inoculated with selenibacteria strains and <i>G. claroideum</i>."</li> <li><b>Consistency</b> Consistency in spelling and formatting of scientific names, units, and references (e.g., italicizing Latin names like <i>Triticum aestivum</i>) should be ensured.</li> <li><b>Scholarly Style</b> While the tone is scholarly, certain phrases could be rephrased to align better with academic standards. For instance: -Original: "It boosts the creation of reactive oxygen species (ROS) because it is a pro-oxidant." -Suggested: "As a pro-oxidant, selenium increases the production of reactive oxygen species (ROS)."</li> </ol> <p><b>Recommendations:</b></p> <ol style="list-style-type: none"> <li><b>Proofreading</b> A thorough proofreading by a native English speaker or a professional editor specializing in scientific writing would help eliminate minor errors and improve overall language quality.</li> <li><b>Language Tools:</b> Utilize tools like Edit gpt, Grammarly or Hemingway to check grammar, sentence complexity, and readability.</li> <li><b>Professional Editing Services</b></li> </ol>	

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	<p>For submission to high-impact journals, consider professional language editing services to ensure the manuscript meets scholarly communication standards.</p> <p><b>PAGE BY PAGE COMMENTS SUMMARY</b></p> <p><b>Introduction</b></p> <p>Page 2, Lines 1–15: The introduction provides context but lacks focus. Simplify the language and explicitly state the research gap. Remove unnecessary technical details that belong to later sections</p> <p><b>.Significance of selenium in human health</b></p> <p>Page 3, Lines 1–25:Correct "Selenium is an amino acid" to "Selenium is a trace element."Avoid repetition of selenium’s antioxidant properties; streamline this information.Provide more recent studies (2018–2024) regarding selenium’s health benefits.</p> <p><b>Status of Selenium in Soil and Crops</b></p> <p>Page 4, Lines 5–20:Add a global map or figure showing selenium distribution for better clarity.Discuss the practical challenges of biofortification in selenium-deficient soils.</p> <p><b>Microbial role in selenium mobilization</b></p> <p>Page 6, Lines 1–30:Break down the microbial mechanisms into bullet points for better readability.Simplify jargon-heavy sentences.Highlight challenges in scaling microbial applications to field conditions.</p> <p><b>Abiotic stress management by selenium</b></p> <p>Page 8, Lines 10–25:Add real-world examples or experimental evidence to support claims.Include a short table summarizing selenium’s effects on different abiotic stresses.</p> <p><b>Crop yield and quality improvement</b></p> <p>Page 10, Lines 1–20:Address the scalability of selenium biofortification for smallholder farmers.Discuss the potential risks of selenium overuse and regulatory challenges.</p> <p><b>Concluding remarks and future directions</b></p> <p>Page 12, Lines 5–30:Condense the conclusion to avoid repetition.Highlight future research priorities, such as omics technologies and CRISPR for selenium biofortification.**Common Issues Throughout the Manuscript</p> <p><b>Grammar and Typos</b> Fix frequent grammatical errors, e.g., "selenium-containing amino acids such selenomethionine" → "selenium-containing amino acids, such as selenomethionine."</p> <p><b>Referencing</b> Update old references with recent studies.</p> <p><b>Key Suggestions</b> Add diagrams for selenium’s biogeochemical cycle and microbial transformation pathways.Include practical examples of selenium-enriched crop trials to strengthen the discussion.Simplify language and remove redundant statements to improve readability.</p> <p><b>Overall Assessment:</b> The language is generally clear and appropriate for academic purposes, but refinement in sentence structure, grammar, and stylistic consistency would further improve the manuscript’s readability and professionalism. With minor revisions, the manuscript will meet the high standards required for scholarly communication.</p>	
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**PART 2:**

	<b>Reviewer’s comment</b>	<b>Author’s comment</b> (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)
<b>Are there ethical issues in this manuscript?</b>	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

**Reviewer Details:**

Name:	<b>Sahr Lamin Sumana</b>
Department, University & Country	<b>Shanghai Ocean University, China</b>