

Review of: "Critical Review on Carbon Nanomaterial Based Electrochemical Sensing of Dopamine the Vital Neurotransmitter"

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Potential competing interests: No potential competing interests to declare.

In my opinion, the manuscript titled *"Critical Review on Carbon Nanomaterial Based Electrochemical Sensing of Dopamine the Vital Neurotransmitter"* provides a comprehensive overview of advancements in electrochemical sensors, particularly focusing on the use of carbonaceous nanomaterials for dopamine detection. It effectively synthesizes recent research findings and highlights the significance of these materials in enhancing sensor performance.

However, I do have some general points that should be considered by the authors to improve the article.

1. Authors should provide more details about the advantages of non-enzymatic electrochemical biosensors over traditional methods. Are there any potential drawbacks or challenges associated with their implementation?
2. What performance metrics (e.g., sensitivity, selectivity, response time) do you consider most critical when evaluating the effectiveness of electrochemical sensors for dopamine detection?
3. In general, what specific properties of carbonaceous nanomaterials make them particularly suitable for electrochemical sensing applications, especially in the context of neurotransmitter detection? And how can they "catch dopamine," and in the case of biosensors – how do they react with proteins?
4. While the review mentions various electroanalytical techniques, a deeper exploration of specific methodologies used in recent studies could enhance understanding. Providing more detailed examples or case studies would strengthen the practical implications of the findings.
5. How do different electrode compositions (e.g., GCE, CPE) impact the performance of dopamine sensors? Are there specific materials that consistently outperform others in sensitivity and selectivity?

In conclusion, I suggest accepting this manuscript after minor revision.