

## REVIEWER'S REPORT

Manuscript No.: IJAR-53472

Date: 20.08.2025

**Title:** BIOACTIVITIES AND POTENTIAL APPLICATION OF INDIAN RED AND BROWN ALGAE IN PHARMACEUTICS

### Recommendation:

Accept as it is .....YES.....

Accept after minor revision... ..

Accept after major revision .....

Do not accept (*Reasons below*)

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Rating	Excel.	Good	Fair	Poor
Originality		√		
Techn. Quality			√	
Clarity			√	
Significance		√		

Reviewer Name: PROF DR DILLIP KUMAR MOHAPATRA

Date: 20.08.2025

### Reviewer's Comment for Publication.

*(To be published with the manuscript in the journal)*

*The reviewer is requested to provide a brief comment (3-4 lines) highlighting the significance, strengths, or key insights of the manuscript. This comment will be Displayed in the journal publication alongside with the reviewers name.*

## Detailed Reviewer's Report

### Strengths

- 1. Timely and Relevant Topic** – The manuscript highlights the pharmacological potential of Indian red and brown algae, which are underutilized but rich in bioactive compounds. This makes it a highly relevant review for marine pharmacology and natural product research.
- 2. Comprehensive Coverage** – The review covers a wide spectrum of bioactivities (anticancer, antioxidant, antidiabetic, antimicrobial, etc.), giving readers a holistic view of therapeutic possibilities.
- 3. Species-Specific Focus** – Emphasis on important Indian algal species (e.g., *Gracilaria edulis*, *Kappaphycus alvarezii*, *Turbinaria conoides*, *Padina tetrastromatica*) strengthens the regional significance of the work.

## REVIEWER'S REPORT

4. **Practical Applications** – The discussion on pharmacological rationale, clinical challenges, and translational research adds applied value.

5. **Sustainability Aspect** – Consideration of sustainable exploitation of marine sources is a valuable addition for pharmaceutical and nutraceutical development.

### Weaknesses

1. **Lack of Quantitative Data** – While biological activities are listed, the review would benefit from including comparative tables of bioactive compounds, concentrations, and efficacy data from cited studies.

2. **Insufficient Mechanistic Insights** – Mechanisms of action are mentioned briefly; more in-depth discussion with molecular pathways and signaling mechanisms is needed.

3. **Limited Critical Evaluation** – The review tends to summarize findings but does not always critically assess limitations of existing studies or contradictory results.

4. **Clinical Evidence Gap** – More emphasis is needed on the status of clinical trials or translational progress to strengthen its pharmaceutical relevance.

5. **Referencing and Citations** – Ensure the inclusion of recent references (last 5 years) to highlight up-to-date research, particularly in biotechnology and algal pharmacology.

### Recommendations for Improvement

Add comparative tables/figures summarizing bioactive compounds, their source species, and pharmacological activities.

Expand the section on mechanisms of action(molecular targets, signaling pathways).

Critically analyze gaps, inconsistencies, and challenges in research rather than only reporting findings.

Include discussion on bioavailability, toxicity, and formulation challenges.

Strengthen the conclusion with future perspectives, especially in industrial-scale production and commercialization.

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## **REVIEWER'S REPORT**

### **Overall Significance**

The manuscript has high significance as a review, especially for researchers in marine biotechnology, pharmacognosy, and pharmaceutical sciences. With revisions addressing the weaknesses, it could serve as a strong reference on Indian red and brown algae bioactivities and their pharmacological applications.