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REVIEWER'S REPORT

Manuscript No.: IJAR-55469

Title: Chemical and Antimicrobial Characterization of Soap Produced from Rubber Seed Oil (*Hevea brasiliensis*) in Côte d'Ivoire

Recommendation:
Accept as it is .....
Accept after minor revision.....
Accept after major revision
Do not accept (*Reasons below*)

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

Reviewer Name: **ANAPANA GOPAL**

Reviewer's Comment for Publication.

General Comments

The manuscript presents a well-defined and socially relevant study focusing on the valorization of rubber seed oil (*Hevea brasiliensis*) for soap production in Côte d'Ivoire. The topic aligns well with current interests in agro-industrial diversification, waste valorization, and sustainable development. The study is comprehensive, covering physicochemical characterization of the oil, soap formulation, chemical safety assessment, and antimicrobial evaluation. Overall, the work is scientifically sound and contributes meaningful applied knowledge. However, certain methodological clarifications, presentation refinements, and deeper analytical discussions are required to strengthen the manuscript and improve its suitability for publication.

Content and Originality

The study demonstrates good originality, particularly in its integrated approach combining oil characterization, soap quality assessment, contaminant screening, and antimicrobial testing within the Ivorian context. While rubber seed oil has been previously studied, its application in soap production with simultaneous evaluation of chemical safety and antimicrobial activity remains limited in the literature, especially in Côte d'Ivoire. The work therefore adds regional novelty and practical relevance. However, the novelty could be further emphasized by clearly stating how this study advances beyond existing reports, particularly those cited from recent years.

Technical Quality

The experimental design is appropriate, and the methods used are generally suitable and based on recognized standards (AOAC, ISO, Codex Alimentarius). The physicochemical analyses are adequately conducted, and the results are coherent and logically interpreted.
Nevertheless, some technical issues should be addressed:

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- The antimicrobial assay description lacks sufficient methodological detail (e.g., type of test, concentration of soap, replication, controls).
- The presentation of antimicrobial results as only (+)/(–) is qualitative; quantitative measurements (e.g., inhibition zones or MIC values) would significantly strengthen the scientific rigor.
- The pH value of the soap (10.3) exceeds certain standards, yet its implications are only briefly discussed; further justification or mitigation strategies should be elaborated.
- Statistical analysis is absent; even basic descriptive statistics or replication details should be included to enhance reliability.

Language and Presentation

The manuscript is written in generally clear and understandable English, with appropriate scientific terminology. However, minor grammatical errors, spacing issues, and formatting inconsistencies are present throughout the text (e.g., spacing in tables, line breaks, inconsistent units).

Suggestions:

- Careful language editing is required to improve fluency and readability.
- Some sentences in the Introduction and Discussion sections are lengthy and could be simplified for clarity.
- Table titles and headings should be consistently formatted and clearly separated from the text.

Structure and Organization

The manuscript follows a conventional and logical structure (Abstract, Introduction, Materials and Methods, Results, Discussion, Conclusion). The flow of information is coherent, and figures and tables are generally well integrated.

However:

- Section numbering is occasionally inconsistent (e.g., "3.2.1" without a preceding "3.2" explanation).
- Tables III and VI would benefit from clearer captions and improved alignment.
- Figure 1 is useful but could be enhanced with better resolution and a more descriptive caption.

References and Citations

The reference list is extensive and relevant, covering both classical and recent literature. Citations are generally appropriate and support the arguments made in the manuscript.

Points to improve:

- Ensure uniform formatting of references (spacing, italics, journal names).
- Some older references could be complemented with more recent studies on antimicrobial soaps and cosmetic safety.
- Verify consistency between in-text citations and the reference list.

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Overall Recommendation

The manuscript addresses an important applied research question with practical implications for sustainable development and agro-industrial valorization. The results are promising and support the feasibility of producing safe and effective soap from rubber seed oil. However, several aspects—particularly methodological clarity, antimicrobial data depth, statistical support, and language refinement—require improvement.

Final Decision

Minor Revision

The manuscript is suitable for publication **after Minor revisions** addressing the technical, methodological, and presentation-related concerns outlined above. With these improvements, the study has strong potential to make a valuable contribution to the field.