

REVIEWER'S REPORT

Manuscript No.: IJAR-59251

Title: Obtaining Gel-Bioethanol Fuel from Eichhornia crassipes Plants "

Recommendation:

Accept

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

Reviewer's ID: JPR- 015

Detailed Reviewer's Report

Reviewer's Comment for Publication.

Acceptance Comment are mentioned below suitable for the paper titled " Obtaining Gel-Bioethanol Fuel from Eichhornia crassipes Plants "

Reviewer Comments: Accept

Reviewer Comments –

1. Introduction:

The introduction clearly establishes the environmental and ecological challenges associated with *Eichhornia crassipes* (water hyacinth) and provides a strong rationale for its valorization into biofuel. The study addresses an important sustainability issue by converting an invasive aquatic plant into a value-added renewable energy product. The research objective is clearly defined and relevant to the development of second-generation biofuels. Overall, the introduction provides an appropriate foundation for the study.

2. Literature Review:

The manuscript demonstrates a relevant understanding of the potential of *Eichhornia crassipes* as a lignocellulosic biomass resource for bioethanol production. The discussion appropriately connects enzymatic hydrolysis, fermentation, and ethanol recovery with the broader concept of biomass valorization. The selected approach is consistent with established pathways for second-generation

REVIEWER'S REPORT

bioethanol production. The literature background sufficiently supports the research problem and methodology adopted in the study.

3. Solution Approach:

The proposed solution approach is systematic, beginning with enzymatic conversion of water hyacinth biomass followed by fermentation using active dry yeast and subsequent distillation. Monitoring parameters such as pH, acidity, density, and Brix provides a useful basis for evaluating fermentation kinetics. The sequential processing approach effectively demonstrates the feasibility of converting an invasive biomass into gel-bioethanol fuel. The methodology is practical and has potential for scale-up and sustainable waste-to-energy applications.

4. Results and Discussion:

The results provide meaningful evidence of fermentation performance through changes in the monitored physicochemical parameters. The reported ethanol extraction ranges after the first and second distillation demonstrate the effectiveness of the recovery process and indicate the potential for obtaining concentrated ethanol from water hyacinth biomass. The subsequent dehydration and gel-fuel preparation further strengthen the practical relevance of the study. Overall, the results are consistent with the stated objective and support the proposed valorization pathway.

5. Conclusion:

The conclusion appropriately summarizes the successful conversion of *Eichhornia crassipes* into gel-bioethanol fuel through enzymatic hydrolysis, fermentation, distillation, and dehydration. The study makes a relevant contribution by addressing both aquatic weed management and renewable fuel production. The proposed process demonstrates potential for value addition to an otherwise problematic biomass resource. The manuscript is therefore suitable for publication and is recommended for acceptance in its present form.