

Submission Confirmation

Dari: Biomass and Bioenergy (em@editorialmanager.com)

Kepada: maria_yuliana_liauw@yahoo.com

Tanggal: Rabu, 18 Desember 2019 pukul 10.18 GMT+7

Dear Dr. Maria Yuliana,

We have received your article "MULTILEVEL FACTORIAL DESIGN - BASED RESPONSE SURFACE METHODOLOGY FOR PROCESS OPTIMIZATION OF BIODIESEL PRODUCTION FROM LEATHER TANNING WASTE USING NON-CATALYTIC SUPERCRITICAL ETHANOL" for Research paper consideration for publication in Biomass and Bioenergy.

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Editorial Manager
Biomass and Bioenergy

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Your Submission

Dari: Abdelrahman Zaky (em@editorialmanager.com)

Kepada: maria_yuliana_liau@yahoo.com

Tanggal: Jumat, 24 Juli 2020 pukul 01.53 GMT+7

Ms. Ref. No.: JBAB-D-19-01462

Title: MULTILEVEL FACTORIAL DESIGN - BASED RESPONSE SURFACE METHODOLOGY FOR PROCESS OPTIMIZATION OF BIODIESEL PRODUCTION FROM LEATHER TANNING WASTE USING NON-CATALYTIC SUPERCRITICAL ETHANOL

Biomass and Bioenergy

Dear Dr. Maria Yuliana,

The editor and reviewers have commented on your above paper. They indicated that it is not ready for publication in its present form. However, if you feel that you can suitably address the comments (included below), I invite you to revise and resubmit your manuscript within 60 days, by Sep 21, 2020.

If you are submitting a revised manuscript, please do the following:

- a) Carefully address the issues raised in the comments in your revised manuscript.
- b) Outline each change made (point by point) as raised in the comments AND/OR provide a suitable rebuttal to each comment not addressed

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I look forward to receiving your revised manuscript.

Yours sincerely,

Abdelrahman Zaky, PhD
Managing Editor
Biomass and Bioenergy

Editor's and Reviewers' comments:

Editor: Thank you for your submission. The reviewer comments are below and attached. In addition to the reviewer comments please address the following

A complete overhaul of English language is needed. Note that only one revision is permitted and so if this is not addressed in the revision the paper may be rejected.

Reviewer #1:

Review of manuscript CARBPOL-D-19-05343

Title: MULTILEVEL FACTORIAL DESIGN - BASED RESPONSE SURFACE METHODOLOGY FOR PROCESS OPTIMIZATION OF BIODIESEL PRODUCTION FROM LEATHER TANNING WASTE USING NON-CATALYTIC SUPERCRITICAL ETHANOL

The manuscript deals with utilizing leather tanning waste for producing bio-diesel. The authors describe that 150 thousand tons of this LTW is available annually in Indonesia and that it poses an environmental problem being not always disposed of adequately. The basic idea of the work complies well with circular and sustainable economy and the described overall process is both important and interesting. It also gives incentive to properly manage this waste stream as value could be obtained from it. Using widely available well-tolerated ethanol for the supercritical processing is also well justified. The authors have made considerable effort in the experimental work and analysis and a fair amount of data has been generated to support the modelling efforts. The authors stress that the process does not employ a catalyst and of course it simplifies things, however, using catalysts is often beneficial from e.g. energy and efficiency point of view.

Having a non-catalytic process

should not be an aim in itself. Aiming at production in a single step is good. I have some concerns and questions about the experimental work and the modeling of the process as well as the way the results are presented, which I hope that the authors could address and clarify.

1. The image quality of the graphical abstract is very poor. In its current form it does not actually provide any added value and I suggest the authors revisit their suggestion.
2. The Highlights are filled with abbreviations that many readers have no chance of understanding considering that they read the Highlights before the manuscript. I suggest the authors also to revisit the Highlights section.
3. Why is the term "non-catalytic" mentioned in the title and even more precisely "non-catalytic supercritical ethanol"? Is it in contrast to catalytic supercritical ethanol?
4. In the abstract, it is mentioned that 150000 tons of the waste is available annually even though it is specified in the introduction that this applies to Indonesia and not globally. The authors should be careful in expressing the context in their discussion. This applies generally to the whole work. Moreover, the abstract again contains some abbreviations which are not explained and are not clear for all readers prior to reading the manuscript.

5. One of the major concern I have concerning the entire work is the general applicability of the results. It appears that no mixing of the reaction mixture is performed in the reactor. However, e.g. solubility issues are mentioned as relevant for the reaction rates. How have the authors verified that mass transfer is not the rate determining step in the overall reaction rate? If the results reflect more the mass transfer rates than intrinsic kinetics, then the results are system specific and of little use for simulating and designing other systems.

6. It was concluded that the molar ratio of ethanol to LTW was the least significant parameter. However, the lowest molar ratio was 35, which is already extremely high. Lower molar ratios would have brought forth the impact of the parameter more clearly and it is not really justified to perform experiments at such high ratios and conclude that the parameter lacks relevance. The lack of correlation actually reduces the model to be dependent of two variables. One of the is temperature, for which good correlations exist if the reactions are performed in the domain of intrinsic kinetics e.g. the Arrhenius equation. Why is a polynomial equation with linear and second order dependence on temperature used instead?

7. What would be the basis for having partly a quadratic time dependence? This seems conceptually peculiar.

The authors have a nice collection of data, which is relevant and deserves to be published in the open literature. However, the I am not convinced that the model developed here is of relevance for further development, as it is not clear that it would be applicable in other than the specific reactor system that the authors have used, due to mass transfer issues. Besides mass transfer issues, more rigorous data interpretation would be beneficial overall e.g. in the form of evaluating solubility. A limited amount of additional experiments e.g. in temperatures between 300-350C and with lower ethanol LTW ratios would add considerably to the data and to the modeling effort as data on both variables is not well suited for modelling in their current range.

The manuscript would benefit from one round more of language checking.

Reviewer #2: The manuscript entitled MULTILEVEL FACTORIAL DESIGN - BASED RESPONSE SURFACE METHODOLOGY FOR PROCESS OPTIMIZATION OF BIODIESEL PRODUCTION FROM LEATHER TANNING WASTE USING NON-CATALYTIC SUPERCRITICAL ETHANOL, does not present a new approach in relation to the surface response methodology for optimization of biodiesel production.

The work is well configured and is interesting in the use of waste from the leather industry and in the use of ethanol instead of methanol as a reagent to form FAEs. I suggest for future work to make an approach that allows working in wet subcritical conditions that would allow working with a less costly system in the treatment of LTW.

Reviewer #3: GENERAL OBSERVATION: The manuscript is focused on the biodiesel production from the leather tanning waste using super critical ethanol. The overall manuscript should have been written in a better way and too lengthy. Moreover, the language and grammar are not up to the mark needed in scientific writing.

* Authors have presented the optimization conditions (3 factors, namely, reaction time (10, 20, 30, 40, & 50 min), temperature (300, 350 & 400 C) & alcohol-to-fat ratio (35, 40 & 45), and 1 response, namely, FAE yield) of biodiesel production from leather tanning waste through a single step non-catalytic transesterification using supercritical alcohol (ethanol, in this case).

* From the ANOVA and RSM, the reaction time of 47.4 min, temperature of 374.6 C and ethanol-to-fat ratio of 40.02 were found to be optimum to produce the predicted FAE yield of 99.68% (98.91% actual yield). From the observations made, the manuscript is written well and almost all the elements are available.

Following are the suggestions, which can be incorporated by the authors in the manuscript to make it more effective.

* INTRODUCTION: The introduction section could be improved by including relevant works in this field using this RSM methodology, which could be compared.

* The novelty in the manuscript is not clearly explained. There are plenty of works available on non-catalytic transesterification using supercritical ethanol from oils. Below are mentioned previous articles published in this field, which are strongly recommended for additional literature study and references, which would improve the continuity and correlation and give the reader a better understanding.

1. Gui, M. M., Lee, K. T., & Bhatia, S. (2009). Supercritical ethanol technology for the production of biodiesel: process optimization studies -- The Journal of Supercritical Fluids, 49(2), 286-292.
2. Tan, K. T., Gui, M. M., Lee, K. T., & Mohamed, A. R. (2010). An optimized study of methanol and ethanol in supercritical alcohol technology for biodiesel production. The Journal of Supercritical Fluids, 53(1-3), 82-87.
3. Muppaneni, T., Reddy, H. K., Ponnusamy, S., Patil, P. D., Sun, Y., Dailey, P., & Deng, S. (2013). Optimization of biodiesel production from palm oil under supercritical ethanol conditions using hexane as co-solvent: A response surface methodology approach. Fuel, 107, 633-640.

4. Reddy, H. K., Muppaneni, T., Patil, P. D., Ponnusamy, S., Cooke, P., Schaub, T., & Deng, S. (2014). Direct conversion of wet algae to crude biodiesel under supercritical ethanol conditions. *Fuel*, 115, 720-726.

* Most of the authors in the above mentioned papers, used the same three factors and responses in their experimental design. Then, what is the originality or variation in this manuscript? Is it just the use of leather tanning waste? If so, the Introduction has to be oriented towards this.

* -P6 Abbreviation : Following to be added in abbreviations of FOGs, TG, AOAC, ASTM, ISO, FAEE, UHP, GC-FID, AV, etc. are not present. Please include.

* -P1L1-4: The title of the manuscript seems to be lengthy and needs to be Precise for wide readership.

* -P2 Graphical Abstract: The graphical abstract seems to be blurred. Need to modify with higher resolution for better view.

* -P5L26-30: These sentences are not required in the abstract. Abstract should be focused more on the aim and outcome of the research in a crisp form. Try to modify it.

* -P5L31: The sentence, "In this work" should be "In this present research".

* -P5L40-42: These sentences are too lucid, try to rewrite with more focus on the present outcome of the study.

* -P5L43-44: In Abstract Keywords, Use single keyword which is not used in the abstract. For example. Use either Leather or Tanning waste and not the both.

* -P6L55-56: The sentence "Currently Indonesia blends 20%" needs citation.

* -P6L58-61: The sentence "by almost 60 folds in a period of 10 years" is too confusing need proper justification.

* -P6L62: The line "Various types of vegetable oils have been studied" should be "Vegetable oils derived from diverse source were actively screened".

* -P8L103: The line "The objective of this study" should be "The present investigation aims to".

* -P8 L104: "alcohol" is misspelled as "alcofol". Please correct.

* -P8L110-111: The present aim of the study needs to be explained better.

* -P14L241: Under the section 3.2. Process Optimization using RSM. Optimization using different methods needs to discuss properly. Cite references under this section is low. Need better discussion with the relevant literature.

* -P22L433-448: In Conclusion, the Future perspective and present research gap needs to be addressed properly.

* -P31-Table 3: The legend of the table needs to be elaborated with the statistical software's used for the study and also mention significance error in both Actual and predicted.

* -P33-Table 4: Which ANOVA analysis was performed "one way" or "two way" assay needs better explanation.

* -P36-Figure 2: Statistical error bar between the individual treatments needs to be included and software used for plotting the graph needs to be included in the figure legends.

* -P37L691: In figure 4, the legends needs to be explained in detail by including statistical data used and software used for plotting the graph.

* -P38-Figure 4: Statistical data for plotting the graph needs to be discussed whether it is plotted using Sigma or excel needs to be explained in detail in the figure legends.

* -P39-Figure 5: Similarly, the significant error bar between the individual treatments needs to be included and mention the statistical software used for plotting the graph needs to be included in the figure legends.

* The materials, methods, results and discussion have been written well.

* Overall, it is observed that the results are promising with about 98% yield, which is relatively high compared to other manuscripts. It would be more effective for better understanding , when a comparison of other papers results with your result could be presented. This can be included in the discussion part.

FINAL IMPRESSION OF THE REVIEWER: Overall, the manuscript requires major language and Grammar correction with native speaker. This Manuscript in its present form clearly fails to make a clear distinction about its Novelty , when there are similar papers published earlier. This comparison and discussion of Results of papers published using this technology should have been done with valid scientific rationale. Therefore, I do not find this manuscript suitable for publication in *Biomass and Bioenergy Journal*, without a major revision.

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Submission Confirmation for JBAB-D-19-01462R1

Dari: Biomass and Bioenergy (em@editorialmanager.com)

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Tanggal: Senin, 10 Agustus 2020 pukul 18.16 GMT+7

Ms. Ref. No.: JBAB-D-19-01462R1

Title: A one-pot synthesis of biodiesel from leather tanning waste using supercritical ethanol: Process Optimization
Research paper
Biomass and Bioenergy

Dear Dr. Maria Yuliana,

This message is to acknowledge that we have received your revised manuscript for reconsideration for publication in Biomass and Bioenergy.

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Your Submission

Dari: Abdelrahman Zaky (em@editorialmanager.com)

Kepada: maria_yuliana_liauw@yahoo.com

Tanggal: Selasa, 25 Agustus 2020 pukul 03.01 GMT+7

Ms. Ref. No.: JBAB-D-19-01462R1

Title: A one-pot synthesis of biodiesel from leather tanning waste using supercritical ethanol: Process Optimization
Biomass and Bioenergy

Dear Dr. Maria Yuliana,

I am pleased to inform you that your paper "A one-pot synthesis of biodiesel from leather tanning waste using supercritical ethanol: Process Optimization" has been accepted for publication in Biomass and Bioenergy.

Your accepted manuscript will now be transferred to our production department and work will begin on creation of the proof. If we need any additional information to create the proof, we will let you know. If not, you will be contacted again in the next few days with a request to approve the proof and to complete a number of online forms that are required for publication.

Thank you for submitting your work to Biomass and Bioenergy.

Yours sincerely,

Abdelrahman Zaky, PhD
Managing Editor
Biomass and Bioenergy

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