



Peer-Review Record:

Green Cosmetic Surfactant from Rice: Characterization and Application

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Reviewer 1: Anonymous

Reviewer 2: Anonymous

Reviewer 3: Catarina Rosado

Reviewer 4: Anonymous

Editor: Carla Villa (Guest Editor of Special Issue “Green Cosmetic Ingredients”)

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First Round of Evaluation

Round 1: Reviewer 1 Report and Author Response

1. The paper describes application of a surfactant in cosmetic emulsions. The topic is very relevant for the audience of *Cosmetics*. However, the contents and the structure of the paper need considerable revision to improve the quality and the scientific soundness.

Response: The manuscript was revised.

2. In particular, the Result and Discussion section does not content discussion at all. It is recommended to review some relevant literature and to compare the obtained results in order to prove/disprove and to explain them.

Response: Results and Discussion section was revised and some references were added.

3. All results are presented without the standard deviations. It is not indicated, if there are some significant differences. A statistical analysis has to be carried out and presented.

Response: Standard deviations were included.

4. In the introduction, some points have to be completed: the chemical structure of the investigated surfactant as well as a scheme or at least a reaction equation of the synthesis of polyglycerol ester are very missed.

Response: The reaction scheme was added.

5. One of the aims of the work, stated in the abstract and in the introduction is “to synthesize the polyglycerol ester”. In fact, the synthesis is not described in the paper, but only the application. Although there is a subparagraph “characterization” in the method section, I could not find any corresponding results in the result section. May be, there are in the lines 140-143? They are to be replaced and explained, what these shifts mean.

Response: More details have been added.

6. Lines 127, 135 *etc*: the headings have to be completed (synthesis of Etc)

Response: The headings were included.

7. § 2.2.3 “Emulsion preparation”: Tables 1-4 present the composition of different emulsions, which were used. Since so many formulations were tested, it is very difficult to retrace which of them is described in the followed text. Therefore, it is recommended to give to each formulation an unique code and to refer to it in the text and in the figures/tables in the result section.

Response: A code was given to each formulation as suggest.

8. § 2.2.3 below each Table 1-4 there are the procedure description, which are very similar and can be easily summarized in one paragraph.

Response: A general procedure was included.

9. Lines 187-191 belong to a separate section “characterization of emulsions”

Response: The section was separate as suggested.

10. Lines 219-227: the text sounds as an advertisement. There are some statements which are not supported with results or references. E.g. hydrodispersability and formation of liquid crystals.

Response: Some references were included.

11. Line 226: there is a description of some microscopic images, but they are not presented.

Response: The figure of liquid crystals observed under a polarizing microscope was added.

12. Lines 228-229: the reference as well as explanation, why the liquid crystals enhance the moisturizing ability, are missed.

Response: Some references were included.

13. Figures 2-7: as mentioned above, it is very difficult to follow, which formulations are described. Please identify the formulations in the method section.

Response: The codes assigned to each formulation were reported in the figures.

14. All results are given without the standard deviations!!!

Response: Standard deviations were included.

15. Lines 235-236: stability results are not presented.

Response: Stability results were included.

16. Lines 244-246: please check the oil phase amounts (9 to 29 % or 10 to 30 %?).

Response: Oil phase amount were checked.

17. Line 247: which organoleptic characteristics are meant?

Response: Organoleptic characteristics were reported.

18. Lines 253-256: please specify the formulations.

Response: The codes of the formulations were reported.

19. Line 255: please indicate the polarity of the oils.

Response: The polarity of the oils was showed in the legend of Figure 7.

20. Lines 277-281: obviously, the results in the lines 140-143 should be presented here?

Response: The results in the lines 140-143 are the signals of the protons of the emulsifier synthesized. In the lines 277-281 the results of the interaction emulsifier-xanthan gum are reported. Some details were added.

21. In general, the section “results and discussion” has to be considerably restructured and throughout revised. Discussion has to be added.

Response: The section “results and discussion” were revised.

Round 1: Reviewer 2 Report and Author Response

1. Cosmetic formulation is very difficult and complex field in cosmetics. Authors first fixed 5% emulsifier concentration, next 14% oil concentration, so on. I strongly suggest to repeat with 'Design of Experiment' Technique. Fixing one subject, and changing other concentrations may not get optimal cosmetic formulation.

Response: The emulsifying properties and the compatibility between the emulsifier with various ingredients were investigated. For this purpose we designed experimental emulsions containing a few essential ingredients.

2. From Figures 6 and 7, I do not see any advantage from your new method compared with conventional preparation in UVB and UVA. New technique is only justified when you have better results.

Response: The influence of the different emulsifier on the SPF value was compared. The effectiveness of a sunscreen agent applied in an emulsion is influenced mainly by the emulsifier and fatty components. Emulsifier are able to affect surface tension during the film formation phase, the rheological behavior and the distribution of the emulsion on the skin. Rheological behavior has a fundamental importance in the formulation of sunscreens, because the formation of an evenly distributed film is critically influenced by the flowing properties of the formulation. The emulsion containing the UVB filter prepared with the new emulsifier showed the lowest SPF value and less photostability while it improves UVA photostability. More details were added in the Results and Discussion section.

Round 1: Reviewer 3 Report and Author Response

1. In the Introduction, the authors should take into account that some degree of chemical transformation is allowed, for instance, in the Ecocert certification of natural materials.

Response: The suggestion was included in the introduction and the Cosmos-standard was added as reference

2. In the Results section, figure 1 is missing.

Response: The figure was included.

Round 1: Reviewer 4 Report and Author Response

1. The synthesized product is new whatever the approach is now widely applied by the cosmetic industry to prepare new surfactants that may cover the claim of organic and/or natural products.

Response: The observation of the reviewer is right, the method is not new but it allows to obtain green ingredients that can be included in organic/natural cosmetic products.

2. A representation of the synthesis may be useful for the reader.

Response: The reaction scheme was added.

3. The figure of the microscopy representing liquid crystals may be interesting.

Response: The figure of liquid crystals observed under a polarizing microscope was added.

4. Please give more details about the formulation in the figure legend.

Response: In the figure legends more details were added.

5. The reviewer is quite surprised concerning the components used for the formulations, that are not biodegradable and in general not preferred for organic formulations, such as silicons, EDTA, acrylates...

Response: The emulsifying properties and the compatibility between the emulsifier with various ingredients were investigated. For this purpose we designed experimental emulsions containing a few essential ingredients. The emulsions were added with a preservative system that, according to our experience, was suitable for the storage of the preparation during the observation time. The reviewer's observation is right. The green emulsifier is mainly suitable for the formulation of the organic/natural products, but it can be used in any product.

Second Round of Evaluation

Round 2: Reviewer 1 Report and Author Response

1. The manuscript has been significantly improves, however, some points have to be revised. The authors have added standard deviations in the legend of the figures. Such a way of the presentation is very unclear. Usually the SD values are presented in the form of error bars, please change. Furthermore, it is not necessary to give exact values in the diagrams.

Response: Figures 4, 5, 7, 8, 9 and 10 were changed and the error bars were included.

2. Figures 3 and 6: please present scale bars.

Response: The scale bars are shown in Figure 6.

3. The method section still contains some results.

Response: The reviewer may refer to NMR and IR data, but generally these data are given in the method section.

4. Tables 5,6, Figure 8: The SI-Unit for the viscosity is Pa·s, and in my opinion should be used in the scientific publications. Values given in cPs can be easily recalculated.

Response: The viscosity values given in cPs were converted to Pa·s.

Round 2: Reviewer 2 Report and Author Response

The paper is now much better than the original. Accept as it is.

Response: Thank you for your suggestions and consideration.

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