Bukti korespondensi

Paper 12

Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from Juncus Plant Stems

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Corresponding author. E-mail address: mounir.elachaby@um6p.ma
(M. El Achaby).

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Dear Dr syafri,

Submission no: IJBIOMAC_2019_5879
Submission title: Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from Juncus Plant Stems
Corresponding author: Professor Mounir El Achaby
Listed co-author(s): Mrs Zineb Kassab, Dr edi syafri, Dr Youssef Tamraoui, Professor Hassan Hannache

Professor El Achaby has submitted a manuscript to International Journal of Biological Macromolecules and listed you as a co-author. This email is to let you know we will be in contact with updates at each decision stage of the submission process.

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Submission no: IJBIOMAC_2019_5879
Submission title: Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from Juncus Plant Stems
Corresponding author: Professor Mounir El Achaby
Listed co-author(s): Mrs Zineb Kassab, Dr edi syafri, Dr Youssef Tamraoui, Professor Hassan Hannache

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Manuscript Details

Manuscript number	IJBIOMAC_2019_5879_R2
Title	Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from Juncus Plant Stems
Article type	Research Paper

Abstract

In this study, sulfated and carboxylated cellulose nanocrystals (CNC) have been produced from newly identified cellulose-rich bio-sourced material, namely Juncus plant. The Juncus plant stems were firstly subjected to chemical treatments to produce purified cellulose microfibers (CMF) with an average diameter of 3.5 µm and yield of 36 %. By subjecting CMF to sulfuric and citric/hydrochloric mixture acids hydrolysis, sulfated CNC (S-CNC) and carboxylated CNC (C-CNC) have been produced with a diameter of 7.3 ± 2.2 and 6.1 ± 2.8 nm, and a length of 431 ± 94 and 352 ± 79 nm, respectively. These newly extracted S-CNC and C-CNC exhibited a crystallinity of 81 and 83 % with cellulose I structure and showed high thermal stability (> 200 °C). Herein, this newly identified Juncus plant, which is a naturally-derived source, could be used as a valuable alternative to conventional sources such as wood and cotton for nanocellulose production. We speculate that the determined high thermal stability, the large aspect ratio and high crystallinity will allow the use of the extracted CNC as nano-reinforcing agents in polymers that require processing temperatures of up to 200 °C.

Keywords	Juncus plant stems; acid hydrolysis; cellulose nanocrystals
Manuscript category	Carbohydrates, Natural Polyacids and Lignins
Corresponding Author	Mounir El Achaby
Corresponding Author's Institution	Mohammed VI Polytechnic University
Order of Authors	Zineb Kassab, edi syafri, Youssef Tamraoui, Hassan Hannache, abouelkacem qaiss, Mounir El Achaby
Suggested reviewers	Djalal Trache, Jong-Whan Rhim, Yu-cang Zhang, Ishak Ahmad
Opposed reviewers	Youssef Habibi

Submission Files Included in this PDF

File Name [File Type]

Cover Letter_IJBIOMAC_2019_5879_R1.docx [Cover Letter]

Responses to editors comments_IJBIOMAC_2019_5879_R1.docx [Response to Reviewers]

Revised Highlights_IJBIOMAC_2019_5879_R1.docx [Highlights]

Revised abstract_IJBIOMAC_2019_5879_R1.docx [Abstract]

Revised Manuscript_IJBIOMAC_2019_5879_R1.docx [Manuscript File]

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Decision Letter - Accept: 04 November 2019

Ref: IJBIOMAC_2019_5879_R2
Title: Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from Juncus Plant Stems
Journal: International Journal of Biological Macromolecules

Dear Edi Syafri,

I am pleased to inform you that your paper has been accepted for publication. My own comments as well as any reviewer comments are appended to the end of this letter.

Your accepted manuscript will now be transferred to our production department. We will create a proof which you will be asked to check. You can read more about this here. Meanwhile, you will be asked to complete a number of online forms required for publication. If we need additional information from you during the production process, we will contact.

Thank you for submitting your work to International Journal of Biological Macromolecules. We hope you consider us again for future submissions.

Kind regards,

Ian Sims
Editor
International Journal of Biological Macromolecules

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Submission no: IJBIOMAC_2019_5879_R2
Submission title: Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from Juncus Plant Stems
Corresponding author: Professor Mounir El Achaby
Listed co-author(s): Mrs Zineb Kassab, Dr edi syafri, Dr Youssef Tamraoui, Professor Hassan Hannache, Dr abouelkacem qaiss

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Prof. Dr. Mounir El Achaby
Université Mohammed VI Polytechnique
Lot 660 – Hay Moulay Rachid
43150 – Benguerir – Morocco
E-mail: mounir.elachaby@um6p.ma
Tel: (+2126) 62010620

25-10- 2019

Editors-in-Chief, International Journal of Biological Macromolecules

Ref: IJBIOMAC_2019_5879_R1

Manuscript title: **Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from Juncus Plant Stems**

Dear Editors,

We were pleased to have an opportunity to revise our paper. We are appreciative of such constructive feedback on our revised version of our manuscript and we want to extend our appreciation for taking the time and effort necessary to provide such insightful guidance. We are also very much thankful to the editors and reviewers for their deep and thorough review. In revising the paper, we have carefully considered the comments and suggestions of the editors. Below are the explanations for each of editors' comments:

Finally, we hope that you will find our manuscript suitable for publication in International Journal of Biological Macromolecules and we believe these findings will be of interest to the readers of your journal.

I look forward to your favorable consideration.

Sincerely yours,

On behalf of all the co-authors
Prof. Dr. Mounir El Achaby

Characteristics of Sulfated and Carboxylated Cellulose Nanocrystals Extracted from *Juncus* Plant Stems

Zineb Kassab[a,b], Edi Syafri[c], Youssef Tamraoui[a], Hassan Hannache[a,b], Abou El Kacem Qaiss[d], Mounir El Achaby[a,*]

[a] Materials Science and Nanoengineering Department (MSN), Mohammed VI Polytechnic University (UM6P), Lot 660 – Hay Moulay Rachid, 43150, Benguerir, Morocco

[b] Laboratoire d'Ingénierie et Matériaux (LIMAT), Faculté des Sciences Ben M'sik, Université Hassan II de Casablanca, B.P.7955, Casablanca, Morocco

[c] Department of Agricultural Technology, Agricultural Polytechnic, Payakumbuh, West Sumatra 26271, Indonesia

[d] Composites and Nanocomposites Center (CNC), Moroccan Foundation for Advanced Science, Innovation and Research (MAScIR), Rabat Design, Rue Mohamed El Jazouli, Madinat El Irfane 10100, Rabat, Morocco

**Corresponding author:*

Email address: mounir.elachaby@um6p.ma

Comments from the editors and reviewers:

Query_1: Please now follow the Guide for Authors fully before acceptance of your paper:

Reply_1: The paper is now structured according to the Guide for Authors. Please see the revised manuscript.

Query_2: Can you also please explain the contribution of the new author added to the manuscript.

Reply_2: The author "Abou El Kacem Qaiss" is added to the manuscript, because he had a major contribution during the revision process.

Publish

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Characteristics of sulfated and carboxylated cellulose nanocrystals extracted from *Juncus* plant stems

Zineb Kassab [a,b], Edi Syafri [c], Youssef Tamraoui [a], Hassan Hannache [a,b], Abou El Kacem Qaiss [d], Mounir El Achaby [a,*]

[a] Materials Science and Nanoengineering Department (MSN), Mohammed VI Polytechnic University (UM6P), Lot 660 – Hay Moulay Rachid, 43150 Benguerir, Morocco
[b] Laboratoire d'Ingénierie et Matériaux (LIMAT), Faculté des Sciences Ben M'sik, Université Hassan II de Casablanca, B.P.7955 Casablanca, Morocco
[c] Department of Agricultural Technology, Agricultural Polytechnic, Payakumbuh, West Sumatra 26271, Indonesia
[d] Composites and Nanocomposites Center (CNC), Moroccan Foundation for Advanced Science, Innovation and Research (MAScIR), Rabat Design, Rue Mohamed El Jazouli, Madinat El Irfane, 10100 Rabat, Morocco

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Keywords:
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In this study, sulfated and carboxylated cellulose nanocrystals (CNC) have been produced from newly identified cellulose-rich bio-sourced material, namely *Juncus* plant. The *Juncus* plant stems were firstly subjected to chemical treatments to produce purified cellulose microfibers (CMF) with an average diameter of 3.5 μm and yield of 36%. By subjecting CMF to sulfuric and citric/hydrochloric mixture acids hydrolysis, sulfated CNC (S-CNC) and carboxylated CNC (C-CNC) have been produced with a diameter of 7.3 ± 2.2 and 6.1 ± 2.8 nm, and a length of 431 ± 94 and 352 ± 79 nm, respectively. These newly extracted S-CNC and C-CNC exhibited a crystallinity of 81% and 83% with cellulose *I* structure and showed high thermal stability (>200 °C). Herein, this newly identified *Juncus* plant, which is a naturally-derived source, could be used as a valuable alternative to conventional sources such as wood and cotton for nanocellulose production. We speculate that the determined high thermal stability, the large aspect ratio and high crystallinity will allow the use of the extracted CNC as nano-reinforcing agents in polymers that require processing temperatures of up to 200 °C. Owing to their surface functionalities (sulfated or carboxylated surface groups), the here produced CNC could be used as nano-additives or nano-reinforcing agents for water-soluble bio-polymers in order to produce bio-nanocomposites by solvent casting techniques.