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Correction

Correction: Hydrothermal carbonization of glucose in saline solution: sequestration of nutrients on carbonaceous materials

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A correction on

Hydrothermal carbonization of glucose in saline solution: sequestration of nutrients on carbonaceous materials
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Section 3.5 has been rewritten. The changes have no material impact on the conclusion of this article. The original manuscript will be updated [1]. We apologize for any inconvenience caused to our readers by this change.

3.5. Formation of nutrient sequestered carbon particles

A number of studies has been reported the HTC reaction pathways to produce hydrochar from model compounds (e.g., sugars, cellulose) to real biomass (e.g., wood) [18,20,31,38]. Regardless of the feedstock type, four major HTC reactions occur in this following sequence: (i) dehydration of sugars into furan compounds, (ii) polymerization or condensation of furan-derivatives, (iii) aromatization of polymerized products, and finally (iv) solidification of macromolecules into macromolecules [33,38]. Based on the FTIR results previously explained in Section 3.3, it is evident that similar reaction mechanism takes place for sugar molecules with the presence of salinity as well. In addition, nutrient sequestration on the surface take place via chemisorption. The complete reaction mechanism is shown in Figure 7. Previously, it was reported that hydrochar spheres consist of a hydrophobic core and hydrophilic surface with various oxygen functional groups [18,31]. Due to their charge density, these functional groups (esters, acids, ketones etc.) are behaving as chemisorption sites (section 3.3) [22,23]. Charged nutrient molecules (NH_4^+, PO_4^{3-}) are attracted by the surface sites and adsorb as shown in Figure 7. These functional groups on the surface chemisorb nutrient ions, which are also found from FTIR spectra. The longer reaction temperature results more functional groups on the solid surface. Therefore, more nutrients are sequestered on the hydrochar surface.

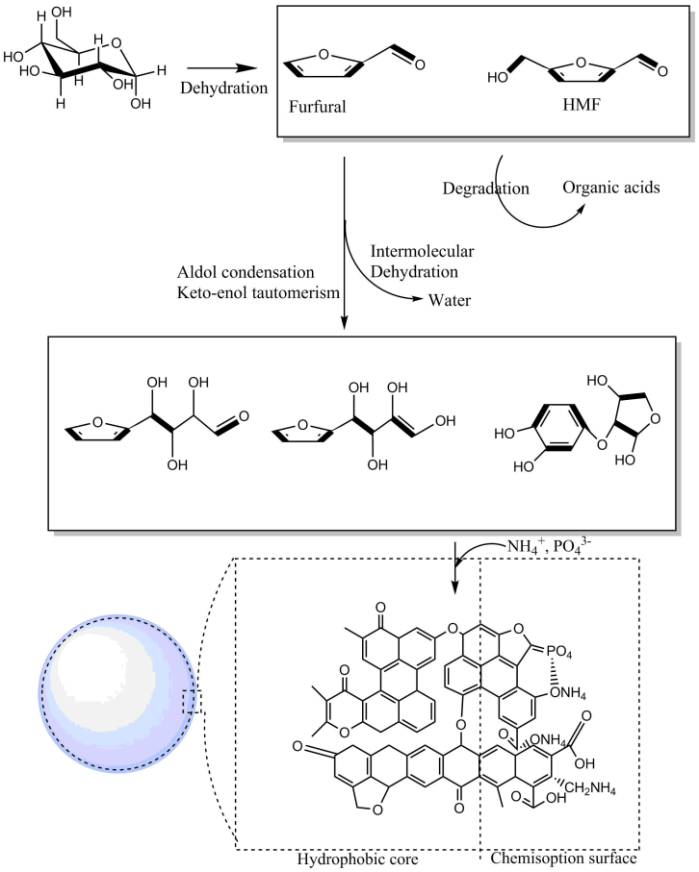

Figure 7. Mechanism of the formation of nutrient sequestered carbon particles from glucose in saline solution [33,38].

Conflict of interest

All authors declare no conflicts of interest in this paper.

References

1. Reza MT, Nover J, Wirth B, et al. (2016) Hydrothermal carbonization of glucose in saline solution: sequestration of nutrients on carbonaceous materials. *AIMS Energy* 4: 173–189.

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