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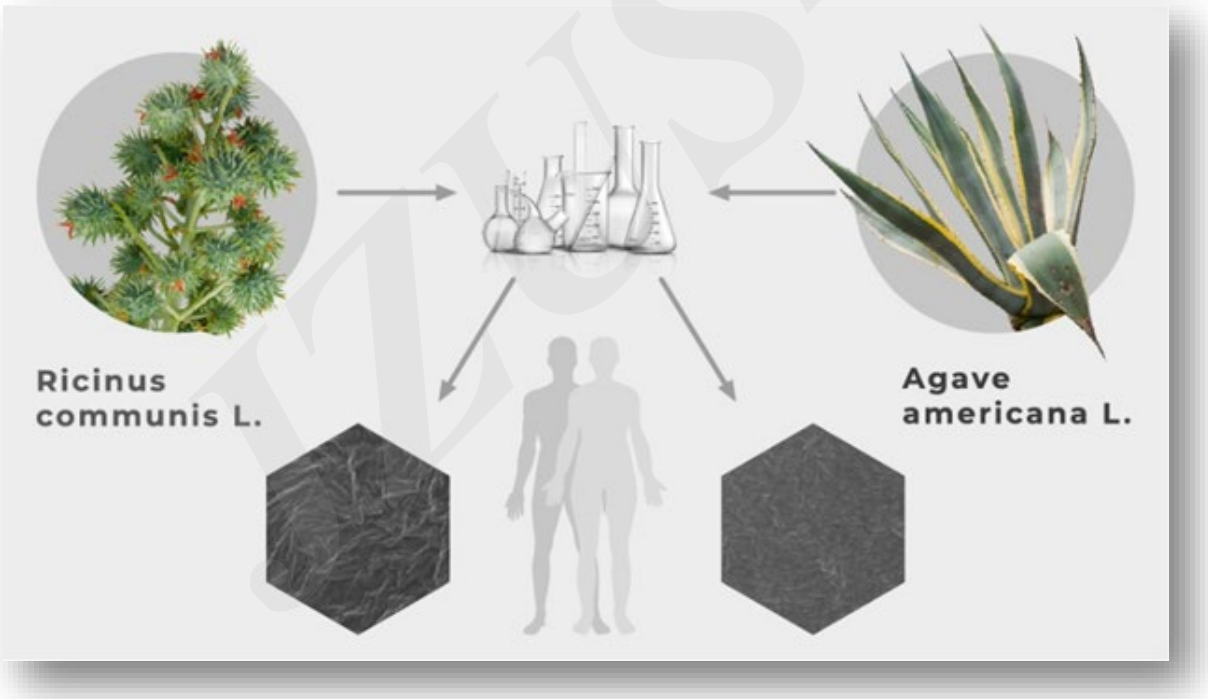
Cytocompatible cellulose nanofibers from invasive plant species *Agave americana* L. and *Ricinus communis* L.: a renewable green source of highly crystalline nanocellulose

Key words: nanofibers, nanocellulose, *Agave americana* L., *Ricinus communis* L., crystallinity, invasive species, biomedical applications

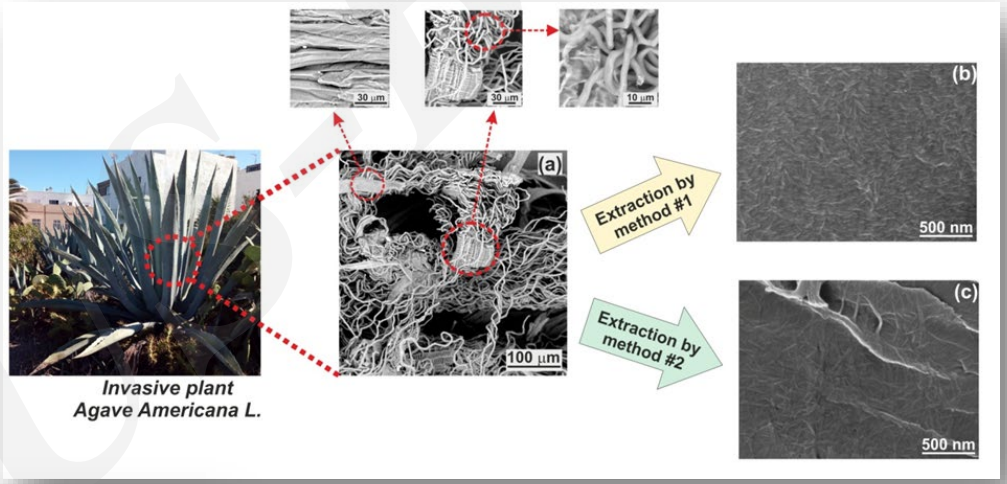
Synopsis:

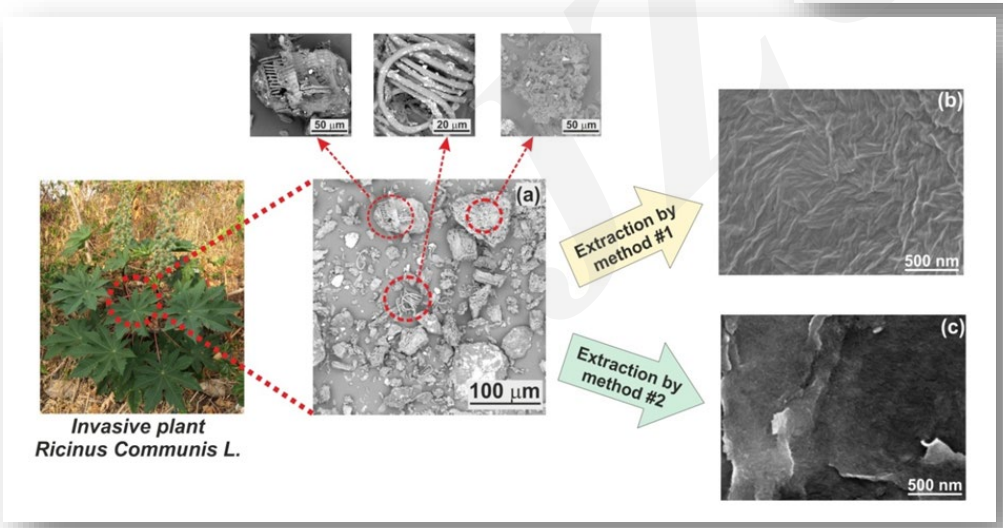
The invasive and fast-growing species *Agave americana* L. and *Ricinus communis* L. were successfully used as a new renewable and green source of highly crystalline and cytocompatible nanocellulose.



Innovation points

- **Fibers of invasive species *Agave americana L.* and *Ricinus communis* L. were successfully used as a new source to produce very highly crystalline cellulose nanofibers with a crystallinity index (CI) of 94% and 92.7 %, respectively.**





Innovation points

- **The nanofibers produced are cytocompatible in the concentration range tested (0-500 µg/mL) on HEK 293T cells.**

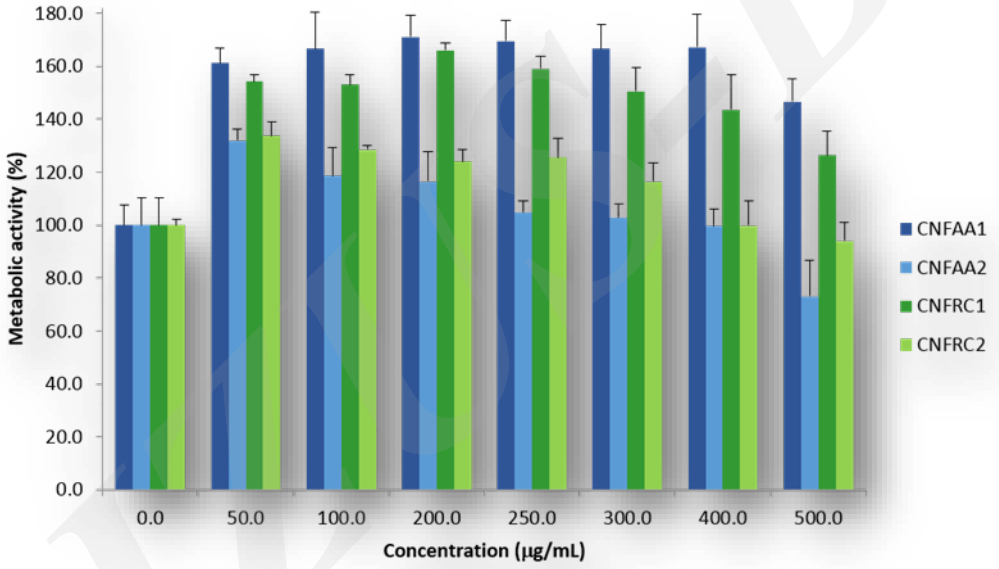
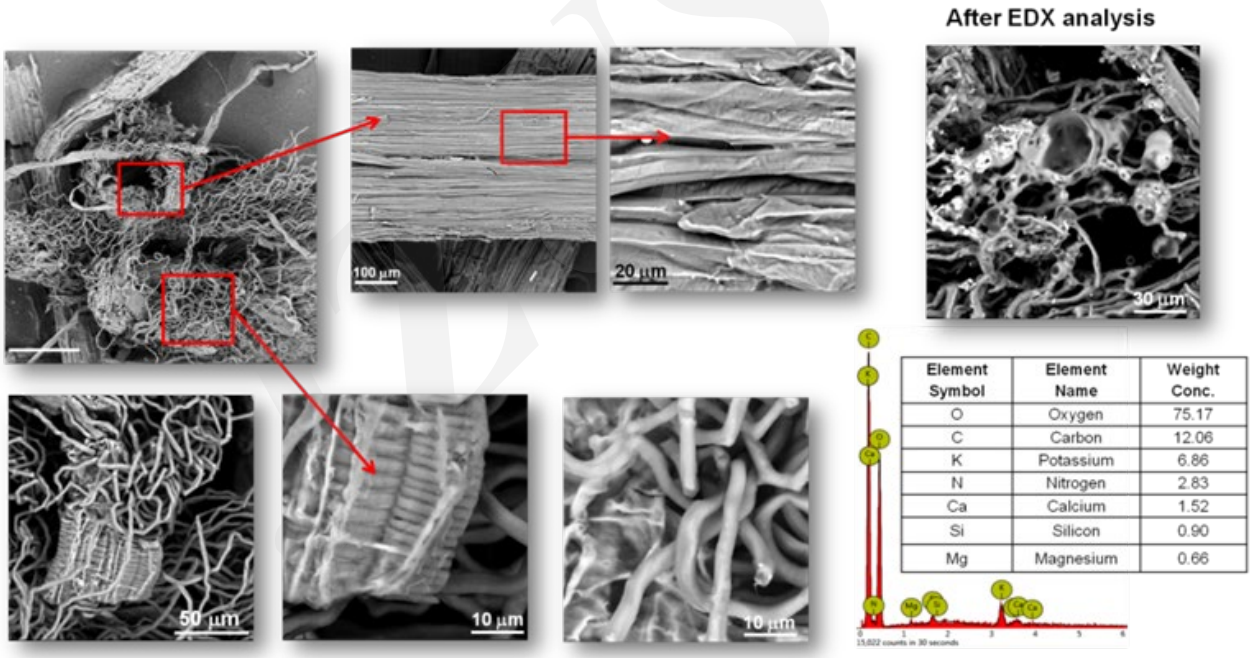


Figure 7. MTT viability assay of HEK 293T cells treated with cellulose nanofibers derived from *Agave americana L.* and *Ricinus communis L.*. Increasing concentrations of the $\mathbf{CNF_{AA1}}$, $\mathbf{CNF_{AA2}}$, $\mathbf{CNF_{RC1}}$, and $\mathbf{CNF_{RC2}}$ samples were used to treat the cells for 48 hours after cell seeding. All results are expressed as the mean ± sd.

Innovation points

- **Emphasis**

This work demonstrates that not only can nanocellulose be extracted from the fibers of *Agave americana L.* and *Ricinus communis L.*, but it has high intrinsic potential as a new renewable, green source of highly crystalline cellulose-based nanomaterials for biomedical applications.



Element Symbol	Element Name	Weight Conc.
O	Oxygen	75.17
C	Carbon	12.06
K	Potassium	6.86
N	Nitrogen	2.83
Ca	Calcium	1.52
Si	Silicon	0.90
Mg	Magnesium	0.66

Figure S1. SEM images of raw *Agave Americana L.* together with EDX analysis.