Editorial

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The Sustainable Material of the Future

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What if there was a very abundant natural material from renewable and sustainable resources? And what if this material was biodegradable, low toxicity, low risks to health, safety, environment and was also biocompatible? Sounds like a lie, but this material exists! It's nothing less than cellulose! Cellulose is a polysaccharide that exists in plant structures in combination with lignin and hemicellulose, giving stiffness and firmness to plants, but this compound can also be created by some species of algae, bacteria and tunicates (1-4). Traditionally, it is used in the industry to produce paper, optical films, food products, pharmaceuticals, cosmetics among many other applications. But where this compound shines is in nanotechnology!

In nanotechnology, cellulose has a tremendous potential, being studied extensively for different research areas5, much because of its low cost, low density, thermal stability, biodegradability, biocompatibility, high hydrophilicity, low toxicity, high surface area and due to its remarkable physical and mechanical properties (5-7).

There are several cellulose based particles such as microcrystalline cellulose (MCCs), micro-fibrillated cellulose (MFCs), nano-fibrillated cellulose (NFCs) and cellulose nanocrystals (NCCs). These particles differ depending on their size, morphology, crystallinity, crystalline structure, aspect ratio and end-use properties.

The properties present in these particles are extremely appealing for biomedical uses, in my research team we are preparing new projects for the application of nano-fibrillated cellulose and cellulose nanocrystals for biomedical use due to the suitability of the particles properties, and we hope, in future articles, have some exciting results to share! Those elongated rod-like particles know as cellulose nanocrystals, for example, are an incredible material, being investigated for biomedical purposes for drug delivery and excipient, tissue bioscaffolds, immobilization and recognition of enzyme/protein and blood vessel, cartilage or ligament replacement (8-11). The possibility of this material in nanotechnology is electrifying for us researchers and we can see a very bright future for this material.

This editorial symbol my entry into the Editorial Board of the journal "Advances in Nanoscience and Nanotechnology" and I look forward to help in the development and growth of this journal.

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