Polymer Sciences
ISSN: 2471-9935

Open access Short communication

Cellulose as the Remarkable Polymer that Shapes our World

Jon Billy*

Department of Food Science and Technology, Tabriz University of Medical Sciences, Iran

INTRODUCTION

In the realm of organic compounds, few hold as much significance as cellulose. It is a polymer that forms the structural backbone of plant cell walls, provides dietary fiber to animals and humans, and plays an integral role in industries ranging from textiles to paper production [1-3]. This remarkable polymer, with its unique properties and versatile applications, has earned its place as one of the cornerstones of biological and industrial processes. Cellulose is a polysaccharide, which is a complex carbohydrate composed of repeating sugar units. It is primarily composed of glucose molecules linked together by β-1,4-glycosidic bonds. This distinctive bonding pattern results in long, linear chains that align parallel to each other, forming a strong and rigid structure. It is this structural arrangement that imparts cellulose with its remarkable properties. In nature, cellulose is a fundamental component of plant cell walls. These walls provide support and protection to plant cells, enabling them to maintain their shape and withstand various environmental stresses. The intermolecular hydrogen bonding between adjacent cellulose chains further enhances the strength and stability of the overall structure. It's fascinating to think that the towering trees that dominate landscapes and the delicate flowers that grace our gardens owe much of their structural integrity to the unassuming cellulose molecule.

DESCRIPTION

While cellulose itself is not digestible by most animals, its presence in plant-based foods provides an essential dietary component known as dietary fiber. Dietary fiber is crucial for maintaining a healthy digestive system. It adds bulk to the diet, promotes regular bowel movements, and can contribute to a feeling of fullness after meals, which aids in weight management. Moreover, fiber has been linked to a reduced risk of chronic diseases such as heart disease, diabetes, and certain types of cancer. Although cellulose's rigid structure makes it resistant to digestion in the stomach and small intestine, certain microorganisms in the digestive tract of herbivores, such as cows and termites, possess the enzymes necessary to break down cellulose into simpler sugars. Beyond its natural role in plants and nutrition, cellulose has found its way into various industrial applications, revolutionizing the way we produce everyday items. One of the most well-known uses of cellulose is in the production of paper. Wood pulp, which is rich in cellulose fibers, is processed to extract cellulose and then formed into sheets through mechanical or chemical processes [4,5]. The resulting paper is used for writing, printing, packaging, and a multitude of other purposes that have transformed communication and packaging industries.

CONCLUSION

Cellulose, a simple yet sophisticated polymer, plays a pivotal role in shaping our world. Its presence in plants not only provides structure and protection but also offers nutritional benefits to animals and humans. From paper to textiles, biofuels to biomedicine, cellulose's versatility has made it an indispensable resource in various industries. As we continue to unlock its potential, cellulose may hold the key to addressing some of the most pressing challenges of our time, from sustainable energy production to environmentally conscious manufacturing. In essence, cellulose serves as a reminder of the intricate connections between the natural world and human ingenuity.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

REFERENCES

1. Salvador-Morales C, Grodzinski P (2022) Nanotechnology tools enabling biological discovery. ACS Nano 16(4):5062-5084.
2. Dzulkharnien NSF, Rohani R (2022) A review on current

Received:	31-May-2023	**Manuscript No:**	IPPS-23-17466
Editor assigned:	02-June-2023	**PreQC No:**	IPPS-23-17466 (PQ)
Reviewed:	16-June-2023	**QC No:**	IPPS-23-17466
Revised:	21-June-2023	**Manuscript No:**	IPPS-23-17466 (R)
Published:	28-June-2023	**DOI:**	10.36648/2471-9935.23.8.12

Corresponding author Jon Billy, Department of Food Science and Technology, Tabriz University of Medical Sciences, Iran, E-mail: jonbilly_7@tbzmed.ac.ir

Citation Billy J (2023) Cellulose as the Remarkable Polymer that Shapes our World. J Polymer Sci. 8:12.

designation of metallic nanocomposite hydrogel in biomedical applications. Nanomaterials (Basel) 12(10):1629.

3. Wang W, Alexandridis P (2016) Composite polymer electrolytes: Nanoparticles affect structure and properties. Polymers (Basel) 8(11):387.

4. Hu XY, Jing MX, Yang H, Liu QY, Chen F, et al. (2021) Enhanced ionic conductivity and lithium dendrite suppression of polymer solid electrolytes by alumina nanorods and interfacial graphite modification. J Colloid Interface Sci 590:50-59.

5. Ellah NHA, Abouelmagd SA (2016) Surface functionalization of polymeric nanoparticles for tumor drug delivery: Approaches and challenges. Expert Opin Drug Deliv 14(2):201-214.