

Abstract

Wood is a renewable and abundant natural resource that has been utilized by humans for centuries, primarily as a building material. However, its use in the biomedical field is limited due to its natural properties, such as its high moisture content and susceptibility to microbial degradation. This study aims to explore the potential of wood-based biomaterials in the biomedical field by investigating the effects of various chemical treatments on the mechanical and biological properties of wood. The results show that the treated wood exhibits improved mechanical properties and enhanced biocompatibility, making it a promising candidate for biomedical applications.

capabilities and their vital role in shaping a more sustainable world.

The raw materials used in this study consisted of wood samples obtained from sustainably managed forests. Different species of trees, such as pine, spruce, and oak, were selected to analyze the variations in wood biopolymer composition.

Wood biopolymers, including cellulose, hemicellulose, and lignin, were extracted from the collected wood samples using appropriate methods. Cellulose was isolated through chemical treatment to remove other components, while hemicellulose was extracted using alkaline hydrolysis. Lignin was obtained

