Editorial
Polysaccharides for Biomedical Applications

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Polysaccharides have been recognized and applied as promising candidates for diverse biomedical and biotechnological applications, such as diagnosis, bioactive therapy, controlled drug delivery, gene therapy, theranostics, cell encapsulation, tissue engineering, and medical devices, as a benefit of their biocompatibility, biodegradability, inherently low immunogenicity, and unique bioactive properties. The current special issue is motivated by the observed increasing interest and emerging innovative research output shown in the field of polysaccharide-based biomaterials. It aims to disseminate researches and advancements based on the polysaccharides, which can be used alone or applied as part of a hybrid system for biomedical researches and applications.

Seventeen original research articles and a review paper have been collected in this special issue. These articles are themed on the polysaccharide applied for antitumor, antimicrobial, antioxidant, anti-inflammatory, tissue engineering, treatment of asthma, acute lung injury, rheumatoid arthritis, and so forth.

Seven papers focus on the biomedical applications of chitosan. S. Kim summarized the biological activities (antimicrobial, antioxidant, anticancer, and anti-inflammatory activities) of chitosan and its derivatives. E. Szymańska et al. developed the β-glycerophosphate-modified chitosan hydrogels for controlled drug release. D.-L. He et al. applied the hyaluronic acid-conjugated chitosan for the encapsulation of novel anticancer oligopeptide (Perilla seed oligopeptide (PSO)), showing a broad spectrum of anticancer activities. Guo et al. synthesized a cationic chitosan-based nanogel with an average diameter of 55.8 nm for the delivery of 10-hydroxycamptothecin. L. Zhang et al. prepared the alphastatin-loaded chitosan nanoparticles that could inhibit the SphK1-S1P signaling pathway and enhance the antiangiogenic effect of alphastatin. C.-L. Li et al. developed the chitosan-polyethyleneimine as an effective gene (pCGRP) transfection system for the early healing of fractures. Nguyen et al. investigated the antibacterial activity of poly(vinyl alcohol)-chitosan-silver nanoparticle hybrid hydrogels.

Seven articles report the investigations on the biological activities of natural polysaccharides. L. Zhang et al. found that Dendrobium officinale polysaccharides (DOPS) could reduce the pentetrazol-induced brain inflammation and seizures by inhibiting the IL-1β, TNF-α, and MAPK signal pathways. J.-M. Wang et al. discovered that Astragalus polysaccharides could be utilized as potential antioxidative drugs for renal protection. Q. Sun et al. demonstrated the vaccine immune effect of Robinia pseudoacacia polysaccharides (RPPS). J. Sun et al. combined anti-IL-5 mAb and Achyranthes bidentata polysaccharide (ABPS) to improve airway function in a mouse asthma model. C. Peng et al. studied...
the anticancer effects of nanoyam polysaccharides and the *Cyclocarya paliurus* polysaccharide in prostate cancer and thyroid cancer models, respectively. L. Cao et al. obtained the high quality of *Astragalus* polysaccharide by applying the cellulase method and proved its biological features against rheumatoid arthritis.

Four more studies deal with hydrogel or nanoparticle systems for bone regeneration, controlled drug release, and antimicrobial against skin pathogens.

Overall, this special issue bridges the polysaccharide and biomedical applications. We expect that related researchers will get inspired.

**Conflicts of Interest**

The guest editorial team declares no conflict of interest regarding the publication of this special issue.

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