

عنوان مقاله:

Study of Natural Polymers and the Hydrogels and Effects on the Environment

محل انتشار:

دومین کنفرانس ملی و اولین کنفرانس بین المللی چالش های محیط زیست: صنعت و معدن سبز (سال: 1403)

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خلاصه مقاله:

This review summarizes recent progress of the robust and smart hydrogels prepared from natural polymers including polysaccharides, proteins, etc. These hydrogels exhibit outstanding mechanical properties due to their nanofibrous aggregated microstructures and special crosslinking networks. Furthermore, these hydrogels show some smart stimuli responsive behaviors triggered by pH, temperature, light, electricity and magnetism. Hopefully, these hydrogels derived from natural polymers with inherent biodegradation and biocompatibility have great application potential in the fields of biomedicine, tissue engineering, soft robots and bio-machine (۴). Manufacturers are inclined towards using natural polymers. Natural polymers are basically polysaccharides so they are biocompatible and without any side effects. This review discusses various natural polymers, their advantages over synthetic polymers and role of natural polymers in designing novel drug delivery systems (۳). Polymers are versatile materials composed of repeating structural units forming a macromolecule. The three major classes of polymers based on their origin are natural polymers, semisynthetic polymers, and synthetic polymers. Natural polymers are of natural origins such as from plants, microorganisms, and animals. They include carbohydrates and proteins, which provide structural support to plants and animals. There are six main types of natural polymer: proteins, polysaccharides, polynucleotides, polyisoprenes, polyesters, and lignin. As compared to the other two classes, natural polymers are economical, readily available, potentially biodegradable, and biocompatible due to their origin. Many of these polymers are a part of our day-to-day diet and also possess significant scope in drugs, prosthetics, pharmaceuticals, food, and (cosmetic industries. Some of these widely used natural polymers based on polysaccharides and proteins are discussed in the following section (۵

کلمات کلیدی:

Agar, Cellulose , gum Arabic , Robust and smart hydrogels , Natural polysaccharides , Biomedical applications

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