ENVIRONMENT SAFE BIO-DEGRADABLE POLYMERS

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Abstract

Biodegradable polymers are intended by the action of living organisms to degrade upon disposal. The development of practical procedures and products from polymers like starch, cellulose, and lactic acid has produced extraordinary strides. For down-the-drain products such as detergents and cosmetics, the need to produce alternative biodegradable water-soluble polymers has become increasingly important. For down-the-drain products such as detergents and cosmetics, the need to produce alternative biodegradable water-soluble polymers has become increasingly important.

Key words: Biodegradable polymers, water-soluble polymers

Introduction

For many years after disposal, conventional polymers like polyethylene and polypropylene[1], [2] continue. Constructed for the long run, these polymers appear to be unsuitable for applications where plastics are used and disposed of for brief periods of time. In addition, plastics are often soiled by food and other biological substances, making physical recycling of such materials impractical and usually unwanted.

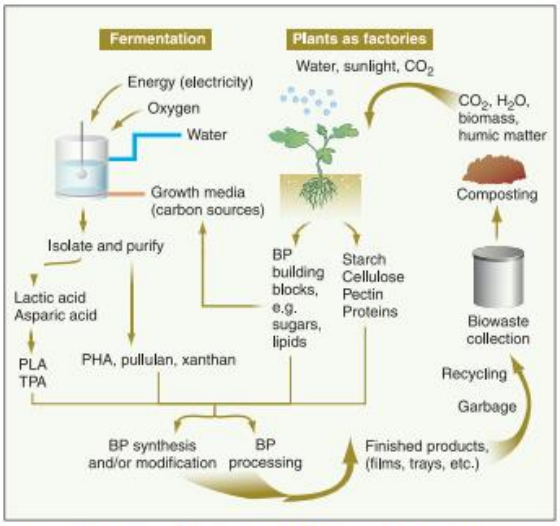

Fig. 1. Cyclic process by which agricultural products and fermentative routes can yield biodegradable polymers. Upon disposal in bio-bins and exposure to a bioactive environment, BPs will biodegrade to natural substances such as CO_2, water, humic matter, and biomass. New agricultural crops, using nutrients from compost and fixing CO_2, will produce new polymer building blocks, monomers, and polymers.

The Biodegradable polymers (BPs) in bioactive environments[3], on the other hand, are degraded by the enzymatic action of microorganisms such as bacteria, fungi, and algae. We define what we consider to be extremely promising biodegradable polymers that are either being developed or already being marketed. For extensive reviews with more detailed descriptions of biodegradable polymers studies for environmental applications

Methodology

Biodegradable Plastics from Starch and Cellulose

Starch product biodegradation recycles atmospheric carbon dioxide trapped by crops that produce starch[4]. All starches comprise amylose and amylopectin in proportions varying with the source of starch. This variation offers a natural mechanism to regulate the characteristics of starch materials.

Biodegradable Plastics from Polyesters

Microbes are generated directly from renewable resources by polyhydroxylalkanoates (PHAs). They can be accumulated to elevated concentrations of bacteria (about 95 percent of cellular dry weight), and genetic or physiological approaches can manipulate their structures. Mixing with synthetic or natural polymers can regulate the physical characteristics and biodegradability of PHAs. A corresponding abundance of microbes producing PHA-degrading enzymes[5] matches

the extensive synthesis of PHAs by microbes. Polypropylene is equivalent to PHAs with brief side chains, while PHAs with longer side chains are elastomeric.

Water-Soluble Biodegradable Polymers

Water-soluble polymers are used as constructors of detergents, inhibitors of scale, flocculants, thickeners, emulsifiers and agents of paper size. They are discovered in products for washing, food, toothpaste, shampoo, conditioners, lotions for skin, and textiles. Acrylic acid, maleic anhydride, methacrylic acid and multiple combinations of these monomers are the biggest quantities of water-soluble polymers.

Conclusion

The marketing of BPs will continue to boost on the grounds of financial and environmental factors in industries where products have a comparatively short-lived use. The marketing of BPs will continue to boost on the grounds of financial and environmental factors in industries where products have a comparatively short-lived use. It will be necessary to address misconceptions that biodegradable polymers cannot be stable for papers with multiple uses over the lifetime of years.

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