



Applications of Bacterial Cellulose-Composites

Sukriti Srivastava [#], Twinkle Wahi [#], Muskan Agarwal, Shipra Khushwaha, Garima Mathur ^{*}

Department of Biotechnology, Jaypee Institute of Information Technology, A-10, Sec-62, Noida-201307, Uttar Pradesh, India

[#]: Equal Contribution

Address for Correspondance: Garima Mathur, garima.mathur@jiit.ac.in

Keywords

Bacterial Cellulose;
Biopolymer;
Cellulose;
Composites;
Biomedical
Applications.

ABSTRACT: Bacterial cellulose (BC), an exopolysaccharide, is produced by some bacteria such as *Gluconacetobacter*, *Acanthamoeba*, *Achromobacter*, *Aerobacter* and *Azotobacter*, as a result of their metabolic activity. It is a biocompatible polymer with excellent physical and chemical properties characterized by high tensile strength, high crystallinity, biodegradability, elastic modulus, hydrophilicity and ability to be moulded into various shapes during production. Due to its improved and consistent physicochemical properties, BC is preferred over naturally available plant cellulose. In the recent past, the demand for biopolymers with altered physicochemical properties has gained attention due to varied applications they possess. To further expand on BC's applications, composites have been synthesized to tailor their structure and physicochemical properties. Composites are modified materials with two or more constituent materials with varying physical and chemical properties. In the recent years, BC composites have been fabricated with various other polymers (chitosan/gelatin/collagen/hydroxyapatite), with improved mechanical strength, light weight, biocompatibility, antimicrobial, thermo-responsive properties and are comparatively less expensive. BC composites are high strength materials due to its high tensile strength and Young's modulus, are electrically conductive, can act as catalytic materials, optical materials, have applications in biomedical field, soft tissue engineering, cartilage tissue and bone engineering. BC composites, if well explored, can prove to be a promising tool in the biomedical applications such as drug delivery, wound healing, skin graft for burns, vascular replacement. However, perfection is still to be achieved in this area and the cost of fabrication is needed to be reduced for production of composites at mass scale and better commercialization. © 2016 iGlobal Research and Publishing Foundation. All rights reserved.

Conference Proceedings: International Conference on Advances in Plant and Microbial Biotechnology (PMB-2017); JIIT, Noida: February 02-04, 2017

Indo Global Journal of Pharmaceutical Sciences(ISSN 2249 1023 ; CODEN- IGJPAI; NLM ID: 101610675) indexed and abstracted in EMBASE(Elsevier), SCIRUS(Elsevier),CABI, CAB Abstracts, Chemical Abstract Services(CAS), American Chemical Society(ACS), Index Copernicus, EBSCO, DOAJ, Google Scholar and many more. For further details, visit <http://iglobaljournal.com>