1. Record Nr. UNINA9910437844703321

Autore	Venkatachalam Geetha
Titolo	Cyclic beta-glucans from microorganisms : production, properties and applications / / Geetha Venkatachalam, Sathyanarayana Gummadi, Mukesh Doble
Pubbl/distr/stampa	New York, : Springer, 2013
ISBN	1-283-90870-0 3-642-32995-0
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (98 p.)
Collana	SpingerBriefs in microbiology, , 2191-5385
Altri autori (Persone)	GummadiSathyanarayana DobleMukesh
Disciplina	572.566
Soggetti	Biochemistry Biodegradation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Cyclic b-Glucans from Microorganisms; Contents; Abbreviations; 1 Introduction; Abstract; 1.1...History of Polysaccharides from Bacteria; 1.2...Cyclic beta -Glucans; 1.3... alpha -Cyclic Glucan; 1.4...Linear Glucans; 1.5...Cyclodextrins; References; 2 Applications of Cyclic beta -Glucans; Abstract; 2.1...In Food; 2.2...Medical Technology; 2.3...As Wound Dressing Material; 2.4...Microparticulate Form of beta -Glucan for Pharmaceutical Application; 2.5...Synthesis of Selenium Nanowires; 2.6...Drug Delivery; 2.7...Enantiomeric Separator; 2.8...In Chiral Technology; 2.9...Chiral Stationary Phase 2.10...Carboxymethylated Cyclic beta -(1,2)-Glucans2.11...Inclusion Complexes; 2.12... beta -D-Glucans Complexation with Zearalenone; 2.13...Inclusion Complex with Paclitaxel; 2.14...Inclusion Complexation with a Plant Flavonoid Luteolin; 2.15...Inclusion Complexation with Naproxen; 2.16...Functionalized beta -(1,3)-Glucan in Carbon Nanotubes; 2.17...Application of Cyclic beta -(1,3),(1,6)-Glucans in Chiral Technology; References; 3 Properties of Cyclic Glucans; Abstract; 3.1...Structure; 3.2...Molecular Biological Function of beta -Glucans in Immunity; 3.2.1 The beta -Glucan Receptor-Dectin-1 3.3...Complex Forming Ability3.4...Cytotoxicity of Cyclic beta -(1,2)-Glucan; References; 4 Analytical Tools for the Characterization of Cyclic

beta -Glucan; Abstract; 4.1...Silica Gel Thin-Layer Chromatography; 4.2...Degree of Polymerization; 4.3...Compositional Analysis of Periplasmic Glucan; 4.4...Glycosidic-Linkage Analysis; 4.5... Arrangement of Linkages; 4.6...Protons and Carbons in Glucan; 4.7... Molecular Weight; 4.8...Functional Groups in Cyclic beta -Glucans; 4.9...Supramolecular Structure; 4.10...Separation of Mixture of Cyclic-beta -Glucan in HPLC; 4.11...CHN Analysis; References
5 Production of Cyclic beta -GlucansAbstract; 5.1...Osmolarity Condition; 5.2...Medium Details; 5.3...Optimization of Medium with Mannitol; 5.4...Effect of Media Components and Operating Conditions; 5.4.1 Carbon; 5.4.2 Nitrogen; 5.4.3 Temperature; 5.4.4 Salt and pH; References; 6 Extraction and Purification of Cyclic beta -Glucan; Abstract; 6.1...Extraction of Cyclic beta -Glucan from Culture Filtrate; 6.2...Isolation and Purification of Osmoregulated Periplasmic Glucans; 6.3...Isolation and Purification of Algal Cyclic Glucans; 6.4...Purification of Cyclic Glucan from Yeast
6.5...Purification Using Column ChromatographyReferences; 7 Mechanism of Cyclic beta -Glucan Production; Abstract; 7.1...Genes Responsible for the Synthesis of Cyclic beta -(1,2)-Glucan in Rhizobiaceae and Agrobacteriaceae; 7.1.1 Genes Responsible for the Production of Cyclic beta -(1,3) Glucan; 7.1.2 Genes Responsible for the Production of Cyclic beta -(1,3)-(1,6)-Glucan; 7.1.3 Genes Responsible for the Production of Cyclic beta -(1,6)-(1,3)-Glucan; 7.2... Genes of Periplasmic Glucans (PGs) of the Proteobacteria; 7.3... Metabolic Pathway of Carbohydrate Metabolism
7.4...Enzymes Involved in Cyclic beta -(1,2)-Glucan Synthesis

Sommario/riassunto

to Cyclic glucans are polysaccharides that are predominantly produced by Agrobacterium, Bradyrhizobium and Rhizobium sp. and widely used in the pharmaceutical and food industries. In this book, the applications, properties, analytical tools, production and genes of four main cyclic -glucans from microorganisms are highlighted and critically evaluated. As biocompatible and biodegradable renewable resources, they have an immense potential for future applications, which has not yet been fully exploited. This concise review will help to bridge this gap.