

1. Record Nr.	UNINA9910633935303321
Titolo	Microbial beta glucanases : molecular structure, functions and applications // edited by N.S. Pradeep and Lekshmi K. Edison
Pubbl/distr/stampa	Singapore : , : Springer, , [2022] ©2022
ISBN	981-19-6466-1
Descrizione fisica	1 online resource (201 pages)
Collana	Interdisciplinary biotechnological advances
Disciplina	574.873224
Soggetti	Beta-glucuronidase genes Glucans
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Contents -- Editors and Contributors -- Chapter 1: Beta-Glucanases: An Introduction, Marketing Dynamics and Industrial Applications -- 1.1 Introduction -- 1.2 Beta-Glucanases -- 1.3 Biotechnological Applications of Beta-Glucanase -- 1.3.1 Beta-Glucanase in Brewing Industry -- 1.3.2 Animal Feed Enzyme Industry -- 1.3.3 Wine Production -- 1.3.4 Biocontrol Activity -- 1.3.5 - Glucanase in Protoplast Preparation -- 1.3.6 Germination Enhancement by Beta-Glucanases -- 1.4 Beta-Glucanases: Market Dynamics -- References -- Chapter 2: Structure and Classification of Beta-Glucanases -- 2.1 Introduction -- 2.2 Beta-Glucanases Are Glycosyl Hydrolases (GHs) -- 2.3 Catalytic Mechanism -- 2.4 Carbohydrate-Binding Modules (CBMs) -- 2.5 Linkers -- 2.6 Classification of Beta-Glucanase -- 2.6.1 Endo--1,3-Glucanase -- 2.6.2 Exo-Beta-1,4-Glucanase -- References -- Chapter 3: Beta-Glucanase: Diverse Bacterial Sources and its Applications -- 3.1 Introduction -- 3.2 Diverse Bacterial Sources -- 3.3 Applications -- References -- Chapter 4: Beta-Glucanases: Sources and Production from Fungi -- 4.1 Introduction -- 4.2 Types of Glucanases -- 4.3 Glucanases in Multicellular Fungi -- 4.3.1 Role of Fungal Glucanases -- 4.3.1.1 Fungal -1,3-Glucanases -- 4.3.1.1.1 Provide Nutrition -- 4.3.1.1.2 Morphogenesis and Conidial Germination -- 4.3.1.1.3 As Biocontrol Agent -- 4.3.1.1.4 Establishing Infection -- 4.3.1.1.5 Establishing

Endophytes -- 4.3.1.1.6 Elicitors of Plant Defence Mechanism --
4.3.1.2 -D-1,6-Glucanases -- 4.3.1.2.1 Role in Establishing
Endophytes -- 4.3.1.2.2 Role in Disease Prevention -- 4.3.1.3 Endo-
(14)--Glucanases -- 4.3.1.4 Alpha-1,3-Glucanase -- 4.3.1.4.1 Role
in Growth and Development -- 4.3.1.4.2 Role in Establishing Infection
-- 4.3.2 Production of Fungal Glucanases -- 4.3.2.1 Selection of
Suitable Organism.
4.3.2.2 Selection of Suitable Substrate -- 4.3.2.3 Isolation, Purification
and Characterization of the Enzyme -- 4.3.3 Applications of
Glucanases -- 4.3.3.1 Application in the Hydrolysis of Lignocellulosic
Biomass -- 4.3.3.2 Application in the Brewing Industry -- 4.4
Glucanases of Yeast -- 4.4.1 Role of Yeast Glucanases -- 4.4.1.1 Role
of Yeast Glucanases in Establishing Infection -- 4.4.1.2 Role of Yeast
Glucanases as a Biocontrol Agent -- 4.4.1.3 Role in Maintaining Turgor
Pressure During Growth of Yeast -- 4.4.2 Production of Yeast
Glucanases -- 4.5 Glucanases of Mushroom -- 4.5.1 Role of Mushroom
Glucanases -- 4.5.1.1 Role of Mushroom Glucanases in Autolysis of
Fruit Body -- 4.5.1.2 Role of Mushroom Glucanases as a Biocontrol
Agent -- 4.5.1.3 Role of Mushroom Glucanases as an Antioxidant
Agent -- 4.5.2 Production of Mushroom Glucanases -- 4.5.3
Applications of Mushroom Glucanases in Traditional Therapies -- 4.6
Conclusion -- References -- Chapter 5: Beta-Glucanases in Animal
Nutrition -- 5.1 Introduction -- 5.2 Role of Beta-Glucans in Animal
Immunity -- 5.3 Beta-Glucans in Animal Diets -- 5.4 Solubilisation and
Viscosity of Beta-Glucans -- 5.5 Major Actions of Feed Enzymes in
Animal Feeds -- 5.6 Role of Beta-Glucanases in Animal Feeds --
References -- Chapter 6: Beta-Glucanase in Breweries -- 6.1
Introduction -- 6.2 Barley Beta-Glucan [(1,3) (1,4)--D-Glucans] -- 6.3
Endogenous Barley Beta-Glucanase -- 6.4 Beta-Glucan Degradation
During Malting -- 6.5 Beta-Glucan Degradation During Mashing -- 6.6
Microbial Beta-Glucanases in Breweries -- References -- Chapter 7:
Applications of Microbial Beta-Glucanase in Crop Improvement Under
Biotic and Abiotic Stress -- 7.1 Introduction -- 7.2 Isolation of
Microbial Having Enzyme -1,3-Glucanase Activity -- 7.3 Various
Types of Beta-Glucanase Produced by Microbes.
7.4 Effect of Microbial Beta-Glucanase on Embryogenesis, Seed
Germination, and Dormancy -- 7.5 Effect of Microbial Beta-Glucanase
in Cell Division -- 7.6 Effect of Microbial Beta-Glucanase in Defense
Against Pathogen -- 7.7 Effect of Microbial Beta-Glucanase in Defense
in Cold Stress Tolerance in Plant -- 7.8 Conclusion -- References --
Chapter 8: Exploitation of Actinobacteria for Beta-Glucanolytic
Enzymes-Screening and Characterization -- 8.1 Introduction -- 8.2
Actinobacterial Genus Streptomyces -- 8.2.1 Streptomyces:
Developmental Cycle -- 8.2.2 Streptomyces: A Source of Industrial
Enzymes -- 8.2.3 Streptomyces: As a Source of -Glucanases -- 8.3
Isolation and Screening of -Glucanase-Producing Actinomycetes
Strains -- 8.4 Identification of Beta-Glucanase-Producing
Actinomycetes Strains: A Polyphasic Approach -- 8.5 The Western
Ghats in Kerala: Look for Glucanolytic Streptomyces spp. -- References
-- Chapter 9: Structural Characterization of Beta-Glucanase from
Actinobacteria -- 9.1 Introduction -- 9.2 Beta-Glucanases from
Streptomyces -- 9.3 Beta-Glucanase Encoding Gene Isolation -- 9.4
Sequence Analysis of Beta-Glucanase Genes -- 9.5 In Silico Prediction
of Physicochemical Parameters and Secondary Structures -- 9.6 Three-
Dimensional Structure Prediction -- 9.7 Molecular Docking --
References -- Chapter 10: Application of Codon Optimization and
Recombinant Expression of Beta-Glucanases -- 10.1 Introduction --
10.2 Strategies for Heterologous Production -- 10.3 Codon

Optimization for Recombinant Expression -- 10.4 Codon Optimization and Overexpression of Beta-Glucanase Genes in E. coli -- References -- Chapter 11: Industrial Production and Purification of Recombinant Beta-Glucanases -- 11.1 Introduction -- 11.2 Industrial Production Beta-Glucanases -- 11.3 Recovery and Purification of Beta-Glucanases. 11.4 Production of Recombinant Beta-Glucanases -- 11.5 Purification and Characterization of Recombinant Beta-Glucanases -- 11.6 Conclusions -- References -- Chapter 12: Biotechnological Avenues in Hybrid Beta-Glucanases -- 12.1 Introduction -- 12.2 Role of Protein Engineering in Hybrid Enzyme Production -- 12.3 Methods for the Creation of Hybrid Enzymes -- 12.4 Beta-Glucanase Hybrid Enzymes: Multifunctionality -- References.
