

Microorganisms for Sustainability 31
Series Editor: Naveen Kumar Arora

Pankaj Kumar Arora *Editor*

Microbial Products for Health, Environment and Agriculture

 Springer

About this chapter



Check for updates

Cite this chapter

Kerker, K., Tiwari, M., Tiwari, D.K., Kerker, S. (2021). Industrial Scale Production of Important Therapeutic Proteins Using Bacterial Expression System. In: Arora, P.K. (eds) Microbial Products for Health, Environment and Agriculture . Microorganisms for Sustainability, vol 31. Springer, Singapore. https://doi.org/10.1007/978-981-16-1947-2_8

Download citation

[.RIS↓](#) [.ENW↓](#) [.BIB↓](#)

DOI

https://doi.org/10.1007/978-981-16-1947-2_8

Published

22 September 2021

Publisher Name

Springer, Singapore

Print ISBN

978-981-16-1946-5

Online ISBN

978-981-16-1947-2

eBook Packages

[Biomedical and Life Sciences](#)
[Biomedical and Life Sciences \(R0\)](#)

Author information

Authors and Affiliations

Department of Biotechnology, Faculty of Life Sciences and Environment, Goa University, Taleigao Plateau, Goa, India

Kunal Kerker, Manisha Tiwari, Dharmendra K. Tiwari & Savita Kerker

Table of contents (16 chapters)

Front Matter

[Download chapter PDF](#)

Pages i–viii

The Good Side of Evil: Harnessing the Power of Helminths as Therapeutics

Naina Arora, Amit Prasad

Pages 1–17

Microbes: An Integral Component of Flavor Production

Himanish Dutta Choudhury, Pappu Deb, Ravi Rajwanshi

Pages 19–38

Clinical Potential of Bacteriophage and Endolysin Based Therapeutics: A Futuristic Approach

Vijay Singh Gondil, Fazal Mehmood Khan, Nancy Mehra, Deepak Kumar, Aastha Khullar, Tanvi Sharma et al.

Pages 39–58

Probiotics: Origin, Products, and Regulations in India

Amrita Narula

Pages 59–101

Fungal Potential for the Degradation of Synthetic Dyes: An Overview of Renewable Alternatives for the Production of Lignin-Modifying Enzymes

Clara Dourado Fernandes, Débora S. Vilar, Nádia Hortense Torres, Muhammad Bilal, Hafiz M. N. Iqbal, Ram Naresh Bharagava et al.

Pages 153–181

Industrial Scale Production of Important Therapeutic Proteins Using Bacterial Expression System

Kunal Kerkar, Manisha Tiwari, Dharmendra K. Tiwari, Savita Kerkar

Pages 183–202

Role of Microbes and Microbial Products in Cancer Therapeutics

Vinayak Sharma, Prakash Kumar Sinha, Jagtar Singh, Eshu Singhal Sinha

Pages 203–220

Bacterial Cellulose: A Multifaceted Microbial Product

Abhay Pandit, Rakesh Kumar

Pages 221–241

Bioremediation: Going the “Nano” Way



Abdul M. Kader, Karan K. Pahuja, Soma Mukherjee, Madhusudan Reddy, Debarati Paul

Pages 243–257


Industrial Scale Production of Important Therapeutic Proteins Using Bacterial Expression System

Chapter | First Online: 22 September 2021

pp 183–202 | [Cite this chapter](#)

Kunal Kerkar, Manisha Tiwari , Dhermendra K. Tiwari & Savita Kerkar 

 Part of the book series: [Microorganisms for Sustainability](#) ((MICRO, volume 31))

 868 Accesses

Abstract

Proteins are very important for the smooth functioning of the human body since they act as structural components, enzymes, signaling molecules and cell–cell interaction mediator. Mutations in genes, might result in improper expression or maturation of proteins leading to mild or serious abnormalities. In many cases, external supply of such functionally active proteins in the body subsidizes protein related abnormalities. Some protein related abnormalities such as diabetes are common in a large section of public where insulin is the best source of protein to streamline the proper body functions. However, large productions of such proteins are required for the treatment of deficient patients. In such a scenario, natural sources are not sufficient enough to match the required demand and chemical synthesis increases the cost. However, recombinant DNA (r-DNA) technology using a host expressing system fulfilled the large-scale therapeutics requirement at a low cost. Bacterial systems when compared to other organisms are the most studied and easy to handle in generating these proteins. Apart from recombinant therapeutic protein production, bacteria naturally produce peptide antibiotics as defense metabolites which can be used to treat bacterial infections. Peptide antibiotics are thus very useful products. However, are naturally produced in minute concentrations in bacterial systems. Hence r-DNA technology is generally preferred for mass production. In this chapter review, we have discussed the major therapeutic proteins, peptide antibiotics and their industrial scale production. We also elaborated the benefits of a bacterial host system for a large-scale production of these recombinant products.