# Patent Search

| | |
|---|---|
| Invention Title | Genetically modified microbial strains for efficient plastic degradation and pollution remediation |
| Publication Number | 35/2023 |
| Publication Date | 01/09/2023 |
| Publication Type | INA |
| Application Number | 202341043427 |
| Application Filing Date | 28/06/2023 |
| Priority Number | |
| Priority Country | |
| Priority Date | |
| Field Of Invention | BIOTECHNOLOGY |
| Classification (IPC) | C12N0001200000, C02F0003340000, C12N0009020000, C12P0007040000, C02F0101320000 |

Inventor

| Name | Address | Country |
|---|---|---|
| Dr. Shivaveerakumar S. | Assistant Professor, Department of Studies in Microbiology, Davangere University, Davanagere, Karnataka, India, Pincode: 577002 | India |
| Dr. Jyothi Hiremath | Assistant Professor, Department of Food and Nutrition, Khaja Bandanawaz University, Kalaburagi, Karnataka, India, Pincode: 585106 | India |
| Dr. Boddi Reddy Sridevi | HOD & Lecturer, Department of Microbiology, Telangana Social Welfare Residential Degree College for Women, Warangal East, Warangal, Telangana, India, Pincode: 506005 | India |
| Dr. Nellore Manoj Kumar | Independent Researcher, Infinite-Research, Founder and CEO, B.O. 15-225, Gollapalem, Venkatagiri, Tirupati District, Andhra Pradesh, India, Pincode: 524132 | India |
| Dr. M.S.N.A. Prasad | Assistant Professor, Department of Chemistry, Institute Of Aeronautical Engineering (IARE), Dundigal, Hyderabad, Telangana, India-500043 | India |
| Dr. Kuljit Kaur | Associate Professor, Department Chemistry, School of Natural Sciences, GNA University, Sri Hargobindgarh, Phagwara-Hoshiarpur Road Phagwara, Punjab, India, Pincode: 144401 | India |
| Ms. Mehak Sharma | Assistant Professor, Department Chemistry, School of Natural Sciences, GNA University, Sri Hargobindgarh, Phagwara-Hoshiarpur Road Phagwara, Punjab, India, Pincode: 144401 | India |

Applicant

| Name | Address | Country |
|---|---|---|
| Dr. Shivaveerakumar S. | Assistant Professor, Department of Studies in Microbiology, Davangere University, Davanagere, Karnataka, India, Pincode: 577002 | India |
| Dr. Jyothi Hiremath | Assistant Professor, Department of Food and Nutrition, Khaja Bandanawaz University, Kalaburagi, Karnataka, India, Pincode: 585106 | India |
| Dr. Boddi Reddy Sridevi | HOD & Lecturer, Department of Microbiology, Telangana Social Welfare Residential Degree College for Women, Warangal East, Warangal, Telangana, India, Pincode: 506005 | India |
| Dr. Nellore Manoj Kumar | Independent Researcher, Infinite-Research, Founder and CEO, B.O. 15-225, Gollapalem, Venkatagiri, Tirupati District, Andhra Pradesh, India, Pincode: 524132 | India |
| Dr. M.S.N.A. Prasad | Assistant Professor, Department of Chemistry, Institute Of Aeronautical Engineering (IARE), Dundigal, Hyderabad, Telangana, India-500043 | India |
| Dr. Kuljit Kaur | Associate Professor, Department Chemistry, School of Natural Sciences, GNA University, Sri Hargobindgarh, Phagwara-Hoshiarpur Road Phagwara, Punjab, India, Pincode: 144401 | India |
| Ms. Mehak Sharma | Assistant Professor, Department Chemistry, School of Natural Sciences, GNA University, Sri Hargobindgarh, Phagwara-Hoshiarpur Road Phagwara, Punjab, India, Pincode: 144401 | India |

**Abstract:**

The present invention relates to the development and application of genetically modified microbial strains designed for efficient degradation of plastic waste. These r comprising modified bacteria and fungi, have been genetically engineered to overexpress specific enzymes capable of breaking down various types of plastics. Furthe invention includes certain embodiments where the microbial strains have been modified to metabolize degradation products into harmless compounds or valuable r such as biofuels. These novel strains can be deployed in a range of environments, including polluted waters, landfills, and industrial waste treatment facilities, providi innovative, eco-friendly solution for plastic waste management and environmental pollution remediation.

**Complete Specification**

Description:The present invention pertains generally to the field of biotechnology and environmental science. More particularly, the invention relates to the develop and use of genetically modified microbial strains that are capable of efficiently degrading different types of plastic materials, resulting in effective environmental po remediation.

Background of the invention:

The escalating consumption of plastic products worldwide and the concurrent improper disposal have escalated the issue of plastic pollution, posing a severe environmental and public health concern. A large portion of these plastic products are not recycled or properly disposed of, instead finding their way into natural environments, causing significant harm to ecosystems, particularly marine ones.

The chemical composition of most plastics renders them resistant to biodegradation, leading to a slow decomposition process that can take hundreds to thousands years. Traditional means of managing plastic waste, such as landfilling, incineration, or physical recycling, are fraught with challenges. Landfills, the most common m take up significant space and risk leaching hazardous substances into surrounding soil and water bodies. Incineration can help reduce the volume of plastic waste, l often results in harmful emissions, contributing to air pollution and climate change. Mechanical recycling can lead to downcycling of the plastic quality and is applic only to a limited range of plastic types.

In recent years, biological methods for plastic degradation have attracted considerable interest as potential sustainable alternatives to the traditional methods. Cert naturally occurring microorganisms, such as bacteria and fungi, have been identified that can degrade specific types of plastics. These microbes produce enzymes t break down the plastic polymers into smaller molecules. However, these natural plastic-degrading microbes often show low degradation efficiency, and their range

View Application Status