PATENT NO. 330765

A PROCESS FOR BIOREMEDIATION OF INDUSTRIAL GREASE WASTE USING A BACTERIAL CONSORTIUM

APPLICATION NO. 1764/DEL/2014

APPLICANT
Motilal Nehru National Institute of Technology

ABSTRACT
The present invention relates to a process for bioremediation of industrial grease waste through solid state fermentation using a bacterial consortium. The bioremediated industrial grease waste can be used as agricultural landfill when mixed with soil. Bioremediation of grease waste was carried out by solid state fermentation comprising mixing grease and agrowaste and employing a bacterial consortium with minimal media. The bacterial consortium consists of bacterial isolates of Citrobacter farmeri, Alcaligen faecalis, Achromobacter insolitus and Bacillus sp.. The bioremediated industrial grease waste (i.e. fermented biomass) was sun dried and mixed with soil for plant growth and seed germination. Urea was also mixed into it for proper growth. The rate of bioremediation of grease waste was checked by Fourier Transform Infrared Spectroscopy (FTIR), elemental analysis (CHNS method) and solvent extraction gravimetric method. Infrared bands typically appear due to oil oxidation at 1700-1780 cm^{-1}.

INVENTOR
Negi, Sangeeta
Kumar, Sunil
Motilal Nehru National Institute of Technology, Department of Biotechnology, Allahabad, U.P

CLAIM 1

A process for bioremediation of industrial grease waste comprising (a)mixing an industrial grease waste with an agrowaste in a ratio in the range of 11 to 12 (w/w) to obtain a mixture; (b)adding a minimal media to said mixture in a ratio of mixtureminimal media in the range of 11 to 13 (w/v) to obtain a resultant mixture and autoclaving the resultant mixture to obtain an autoclaved resultant mixture;(c)innoculating the autoclaved resultant mixture with an innoculum containing 106 to 109 spore/ml of a bacterial consortium consisting of bacterial isolates of Citrobacter farmeri having MTCC No. 5876, Alcaligen faecalis having MTCC No. 5879, Achromobacter insolitus having MTCC No. 5878 and Bacillus sp. having MTCC No. 5877 to obtain innoculated mixture; (d)incubating the innoculated mixture at a temperature in the range of 30°C to 37°C for a time period in the range of 7 to 30 days to obtain a bioremediated industrial grease waste.